The Journal

of the

Louisiana State Medical Society

$4.00 Per Annum, 35c Per Copy
Vol. 112, No. 1

JANUARY, 1960

Published Monthly
1430 Tulane Avenue, New Orleans 12, La.

The Subhepatic Cecum*

• The author reports an occasional anomaly, which complicates surgery for associated abdominal disease.

H. ALLEN KING, M. D. †
Shreveport

THREE embryological accidents lead to placement of the cecum in the right hypochondrium.[5] The first, complete failure of the proximal colon to descend after rotation, is rare and almost always associated with other anomalies. The second, hypofixation, allowing various degrees of mobility of the terminal ileum, cecum, and ascending colon, will rarely, if ever, result in wandering of these organs to the upper right quadrant. The third, premature fixation, occurs often enough to be occasionally encountered by every abdominal surgeon. Attention is directed to this latter type because of its interesting pattern and frequent association with serious abdominal disease.

Review of Embryology [1, 5]

Briefly, rotation may be considered to end during the fifth month of pregnancy when the originally left sided proximal colon lies across the abdomen with the cecum placed under the right lobe of the liver. Normally, descent of the cecum from this location to its proper position in the iliac region, is accomplished between the eighth month and term. Fixation, in which the right mesocolon is lost and the ascending colon becomes adherent to the posterior abdominal wall, may not be completed until the fourth month after birth. This latter process, subject to many variations, also occasionally involves the terminal ileum so that it is likewise attached posteriorly.

Several years ago, while studying 6 cases of appendicitis in the subhepatic area, we were impressed by a striking likeness of anatomical features.[2]

"Generally speaking, the cecum and base of the appendix were incorporated within and behind the anterior fold of visceral peritoneum, pointing upward and/or medially toward the gallbladder and pylorus. The right colon dropped for a short distance as a festoon, redoubling upon

* Presented at the Twelfth Annual Meeting of the Surgical Association of Louisiana, New Orleans, November 8, 1959.

† From the Surgical Service, Veterans Hospital, Shreveport, La.

U of M Bindery MAY 12 '61

itself to join the hepatic flexure. There was no shortening of the ascending colon. The terminal ileum lost its mesentery near the normal site of the ileocecal junction and extended upward in a fixed posterior position to meet the high cecum, entering from behind and medially. The blood supply of the cecum and appendix followed the ileum upward retroperitoneally."

This was, of course, subject to individual variations.

We have since then encountered 4 additional similar cases, associated with abdominal disease. All were the result of premature fixation.

Complications

Appendicitis is frequently associated with subhepatic cecum and, because of the unusual location of the appendix, may cause considerable embarassment.[2] Pain and tenderness occurring in the right abdomen at the level of the umbilicus, lead to employment of an ordinary low appendiceal incision. Upon noting absence of the cecum in the lower right quadrant, loss of mesentery of the terminal ileum, and a high-looped ascending colon, this incision should be immediately closed and the subhepatic area explored. Since the cecum and appendix are often both incorporated within the peritoneal fold, there may be no meso-appendix and care must be taken to identify both the posteriorly located appendiceal artery and terminal ileum, before removal of the diseased appendix. The otherwise uncomplicated subhepatic cecum should not be disturbed in this procedure.

A free, looped right colon hanging as

Figure 1.—Subhepatic cecum, caused by premature fixation of the terminal ileum, cecum, and base of the appendix. The appendix lies transversely behind the gallbladder.

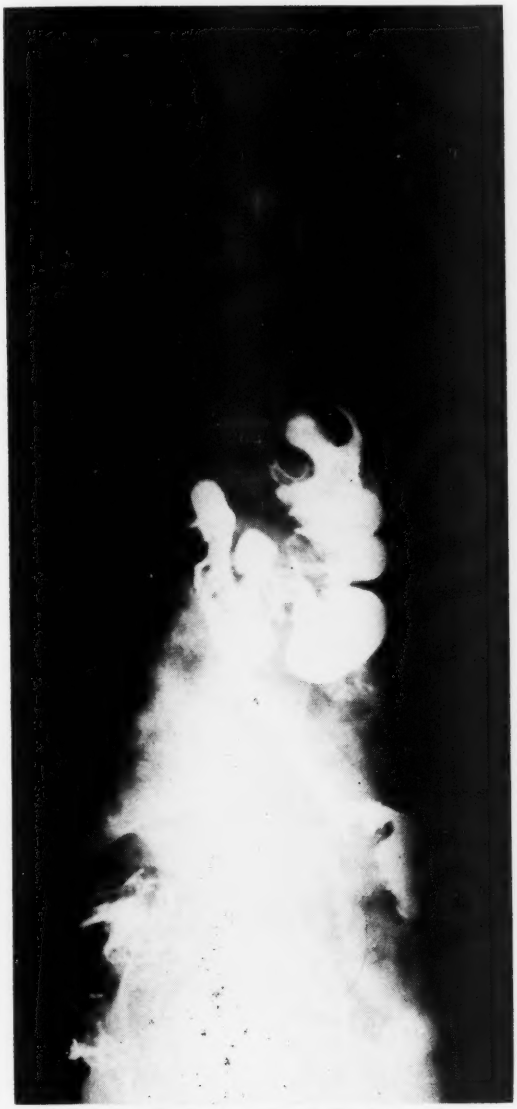

Figure 2.—Barium study of the lower ileum and subhepatic cecum. The fixed terminal ileum extends upward posteriorly to join the cecum. The right colon appears as a short free loop.

a festoon, with high fixation of the cecum at one end, closely approximated with a firmly fixed hepatic flexure at the other, strongly disposes to volvulus at the hepatic flexure. We have recently reported such a case and found a number of similar instances in medical literature.[3, 4]

Premature fixation may result in strangulation, especially after misguided attempts to place the cecum in the iliac fossa. Since the cecum may be firmly held in the upright position by posterior fixation of the terminal ileum, as well as the duodenorenal ligament, movement under such circumstances may be possible only after division and mobilization of the peritoneal reflection along the entire lateral abdominal gutter. Freedom of the terminal ileum and posteriorly placed blood supply should be insured before any attempt at placement of the cecum in the iliac region for cecostomy or any other purpose.

Summary

Subhepatic cecum is an occasional anomaly, usually caused by premature fixation. Recognition of its general pattern is essential for safe treatment of associated abdominal disease.

References

1. Harvey, S. C.: Congenital Variations in the Peritoneal Relations of Ascending Colon, Cecum, Appendix and Terminal Ileum. Ann. Surg., 67:641, 1918.

2. King, A.: Subhepatic Appendicitis. Arch. Surg., 71:265-267, 1955.

3. King, H. A. and Daron, P. D.: Volvulus of the Right Colon Complicating Subhepatic Cecum. Am. J. Surg., 95:793-795, 1959.

4. Homans, J.: Torsion of the Cecum and Ascending Colon. Arch. Surg., 3:395-404, 1921.

5. Wolfer, J. A., Beaton, L. E. and Anson, B. J.: Volvulus of the Cecum. Surg., Gynec. & Obst., 74:882-894, 1942.

A New Method for Detection*†‡ Of Intracranial Neoplasms

• An instrument for outlining radioactive material in brain neoplasms, and thus, a new medical tool is described.

CASWELL K. SMITH, M. D.
New Orleans

THE increasing incidence of intracranial neoplasms in our aging population and the obvious advantage of an earlier diagnosis makes the need urgent for a new diagnostic tool. The old diagnostic triad of headache, vomiting, and papilledema is seen as a rule only in the late stages of neoplasms, and presents no problem. The other complaints associated with intracranial neoplasms of headache, dizziness, and psychic and mental disturbances, form a major portion of the symptoms of patients seen by most medical practitioners, and for this reason this new tool must be a relatively benign procedure to screen out other pathologic processes with similar symptoms.

The electroencephalogram has proved of immeasurable help as a screening and diagnostic tool, but is not infallible, and false localization occurs in 10 to 20 per cent of cases. The risks of herniation in some brain tumors, the morbidity associated with the procedure, the necessity for hospitalization, the added difficulty of lack of filling of the ventricles in some patients with brain tumors and the difficulty in judging the size of the neoplasm, make pneumoencephalography an unwieldy tool.

The objections to arteriography are that it requires hospitalization, produces infarctions in patients with arteriosclerosis and rarely death, is occasionally difficult or impossible to perform with small vessels or if the lesion is located in the posterior cerebrum or posterior fossa, is painful when done with use of a local anesthetic, and gives no good indication of the size of the tumor.

Unstable Nuclides

Since the bombing of Hiroshima and the recent advances in radiophysics with the availability of fission by-products and induced radioactivity of elements by neutron bombardment or charged particles via the massive accelerators, such as the cyclotron, it was almost inevitable that a method would be devised for using these materials in the detection and treatment of neoplasms.

Fifteen years ago, there were ninety ultimate atomic elements. With the development of finer tools for measurements, and more powerful tools for investigation, there have now been described about 250 nuclides. A nuclide is defined as any atomic configuration capable of more than transient existence. The stable nuclides are, generally speaking, the chemical elements we all know so well. The unstable nuclides are those that undergo degeneration with the production of radioactivity.

In the breakdown of these unstable nuclides, alpha rays or the helium atom, beta rays or electrons, and gamma rays or electro-magnetic waves are produced. The penetrating powers of these rays vary. Alpha rays require only a sheet of paper to stop them, and beta rays, a few

* Presented at the Seventh-ninth Annual Meeting of the Louisiana State Medical Society in New Orleans, May, 4-6, 1959.

† From the Department of Neurology and Psychiatry, Ochsner Clinic, New Orleans.

‡ This work was done by Dr. G. M. Shy, Mr. R. B. Bradley, and Mr. W. B. Matthews [1] of the National Institute of Neurological Diseases and Blindness in Washington, D. C. My knowledge of the method was obtained in giving them technical assistance toward the termination of this work.

millimeters of aluminum, but gamma rays are reduced only by a few centimeters of lead. The alpha ray has found no use in neoplastic detection and the beta rays only limited use, as will be discussed later.

As the gamma rays penetrate other materials, their energy is absorbed in three ways. One is the Compton effect, in which the wave bounces off the nucleus to the side like a billiard ball, with slight loss of energy. The second effect is pair production, in which the entire energy of the wave is absorbed by the nucleus of the absorbing element, with production of a positive electron called a Positron, and a negatively-charged electron going in directions 180 degrees apart. The third is the photo-electric effect, in which the wave is completely absorbed by an orbital electron, which is then ejected with the energy of that wave.

Using radioactive tracer elements located in the neoplasm, either by specific uptake of this element or by increase in the permeability of the blood brain barrier around it, and then measuring the localized radioactivity became the method of choice.

History

Moore and associates [2] were the pioneers in this field. They used di-iodofluorescein labeled with iodine^{131}, and counted with the Geiger-Muller tube at several positions located around the skulls for three to five minutes. They believed that neoplastic tissue concentrated the dye up to eighty times that of normal, but also noted that edema and previous roentgen-ray radiation would likewise increase the uptake. They believed that they were able to localize neoplasms correctly in about 84 per cent of cases.

In 1950, Selverstone and coworkers [3] using P^{32} which is only a beta emitter, and an ingenious small Geiger-Muller tube, were able to locate increased uptake within several tumors. As P^{32} is only a beta emitter, this method, however, is of use only at the time of craniotomy and does not help with the problem as I have outlined it.

In 1951, Ashkenazy and associates,[4] utilizing a Geiger-Muller tube, a rate meter and a mechanical graph recorder, claimed accurate localization of brain tumors in 95 per cent of 340 patients. All 148 negative results in this group were confirmed by other technics as also negative. Subsequent investigators were unable, however, to obtain this degree of accuracy and some reported accuracy as low as 5 per cent.[5] Ashkenazy and coworkers emphasized the need for careful clinical correlation so that correct positioning of the detecting device could be utilized. They routinely surveyed 32 positions.

Measurement of Radiation

Some of the problems in using these methods have been the use of the Geiger-Muller tube, which has only 5 to 10 per cent efficiency and a poor resolving power.

The first named objection was resolved by perfection of scintillation counters. This method depends on the fact that when a gamma ray strikes a certain type of crystal called a phosphor, it causes emission of light in the crystal, taking this light to a photo-multiplier tube, which converts the light back to an electric pulse, which is proportional to the amount of light produced, and therefore the energy of the gamma ray. Thirty per cent counting efficiency is thus obtained.

Sweet and Brownell,[5] in 1955, solved some of the other difficulties by using the Positron emitter, AS-74, and a mechanical device known as an electronic scanner, which moved systematically over the head with two detectors 180 degrees apart simultaneously recording the areas with the relatively high radioactive counts. They were able to detect intracranial neoplasms in 75 per cent of cases.

The difficulty with their method was that the small crystal they had to use meant lowered sensitivity. In addition, maximum utilization was for coincidence counting, owing to radioactivity secondary to pair production, and meant that maximum utilization must be half-way between the detectors. The total number

of counts using this method of measurement of radioactivity requires almost non-tracer levels of isotopes to produce sufficient counts.

Francis, Bell and Harris,[7] at the Oak Ridge National Laboratory, using a device called a collimator, which is roughly a cone-shaped piece of heavy metal with several focused tapered holes drilled into it, and placed over a large crystal, were able to count radioactivity from a preferred volume and owing to the shielding properties of the heavy metal, prevent external radiation from reaching the crystal scintillator.

In addition, they designed an instrument called a scintillation spectrometer, which is a quantitative method of measuring radioactivity, that not only indicates the presence of radioactivity, but also the energy of this distribution. One can thus pick out only those gamma rays that have not undergone any reaction within the body, and count only rays that lose their full energy in the crystal and thus tend to eliminate many spurious effects due to the inner action of gamma rays within body tissue.

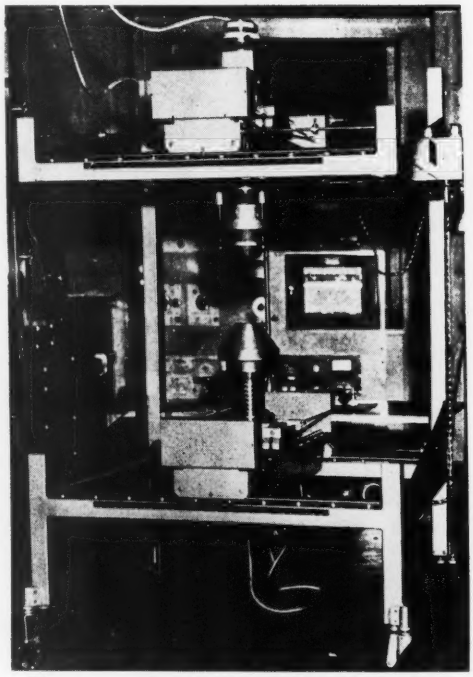

Figure 1.—Front view of the scanner devised by Shy and associates.[1] Note instrument panel to the rear. (Courtesy of Shy and associates [1]).

Development of the Scanner

In 1957 and 1958, Shy and coworkers,[1] using these devices, designed their own equipment (Fig. 1) and experimented with various radioactive materials until an effective method was found. They redesigned the collimator of Francis and associates, changing the design of the focusing holes in the collimator, used gold instead of lead, which cut down stray radioactivity due to its increased density, and in addition, did not contain any radioactive impurities as uranium, which is of course the precursor of and present in all lead. With this collimator they obtained greater counting efficiency and resolution.

This collimator was placed over a one by three-inch NaI(Th) crystal which is cemented to the photo-multiplier window. Both of them are enclosed in a black metal box, which acts as a mechnical support for the crystal, prevents the crystal from taking up water, reflects any light proceeding away from the photo cathode and lastly, shields any stray beta particles. The photo-multiplier is attached to a pre-amplifier, and an amplifier, which uses an external power source to multiply the radioactive effect, and then fed into the previously described scintillation spectrometer and attached dot recorder that maps out the amount of radioactive energy in various portions of the head.

The collimator over the crystal and photo-multiplier tube, which is connected to the pre-amplifier, is the scintillation probe. These are contained in a mechanical device known as a scanner. Actually, there are two scanners which are 180 degrees in opposition; this enables them to pass over two sides of the head at the same time and thus cuts down on the operating time of the instrument, the associated discomfort of the patient, and problems of prolonged technical endeavor.

These scanning devices are installed on a frame constructed of seamless cold drawn steel tubing 2 inches square. The

framework is about 5 feet high and 3 feet square. Each scanner rides on an indexing carriage mounting in the front and rear on roll bearings. These carriages are driven by constant speed motors which may be activated manually in orienting the patient with the machine, and automatically in running the scanning procedure. In addition, these probes are attached to the carriage by a cam lock, which may be unlocked for ease in aligning the probes when positioning the patient.

On the back of the frame that holds the scanners is a platform above which ride two solenoids which are activated by the electrical impulses due to the radiation and tap out in a dot pattern on a piece of paper the relative radioactivity over different portions of the skull. There is one solenoid, of course, for each probe. Behind the scanning frame is the instrument panel containing the two spectrometers, two scalers, two amplifiers, a Brown potentiometer and other electronic equipment as needed.

In order to suspend the patient's head between the two probes, an adjustable canvas head-rest in a metal frame fastened to the head of a standard hospital bed was constructed.

Choice of Nuclide

The final problem to be solved was the choice of a nuclide. The physical and biological half life, plus the type and energy of decay, were of both theoretical and practical importance. Preferably, the isotope should have a half life of less than ten days, and it should be a pure gamma emitter to avoid the ionizing radiation of beta or alpha particles. The isotope should be equally distributed in the body and eliminated from the parts of the body with the exception of the neoplastic tissue. If the energy or decay is excessive and the half life short (between eight and twenty-four hours), larger doses initially would be necessary. This would mean greater radiation hazard, and if the isotope's half life is ten or less hours, it would be necessary that the scanner be close to a place capable of producing a great deal of this nuclide. Of course, the constant demand for medical care around the clock necessitates that this isotope be available at all times.

Pharmacologically speaking, the ideal isotope should be taken orally, but if given intravenously, should be pyrogen free and should have no toxic effect. Zinc 69, for example, when given in adequate amounts, produces nausea, vomiting and diarrhea in about 40 per cent of patients. Another important factor is the concentration of this material within the neoplasm as against nontumorous tissue. The predilection of iodine for thyroid tissue is so high that only a fraction of the radioactivity can be counted. The zinc isotopes, zinc 65 and 69, have shown a predilection for melanoma, and Sweet and coworkers [6] believed that there is an increased uptake of copper and arsenic within neoplastic tissue, but as yet no specific radiotherapy of these tumors using these isotopes has been devised.

Finally, the expense of the isotope is a factor. It should be a commonly found element in nature which can be made unstable easily and cheaply. This is usually done by placement within a neutron flux, and does not require the costly and less reliable production by a cyclotron. Another consideration is the added expense of waste disposal.

Radioactive iodinated human serum albumin, or RISA, which is now being used in most larger hospitals for study of thyroid function and blood volume studies, easily fills all the necessary criteria. The 500 to 600 microcuries of RISA given to perform the ordinary scan is equivalent to about the amount of radiation received from standard roentgenography of the skull.

Scanning Procedure

In performing the original work on this apparatus, the investigators gave the patient the RISA intravenously about twenty-four hours before the scan. It is probable, from other experiments with concentrations of substances in the brain where the blood brain barrier has been

broken down, that a successful scan could be obtained in thirty to sixty minutes after the substance had been injected. The apparatus was warmed up for thirty minutes to an hour before the procedure and the two scintillation counters were balanced against a known radioactive source to eliminate technical artefacts. The patient was placed on the bed with his head on the canvas frame and centered between the two scintillation probes. The scanner was then turned to automatic and allowed to run. With the two probes, it was possible to get anteroposterior and posteroanterior views simultaneously in about twenty minutes. The patient was then placed on his side, again centered and the scanner turned to automatic. Again about twenty minutes were required for scanning and obtaining right and left lateral views.

The scalers on the instrument panel recorded the total number of relative counts from the two sides. The scalers can be set to record every fourth to two hundred and fifty-sixth count. Every sixteenth count was most often used through this work, since it seemed to give the best results. The total counts from radioactivity are tabulated from each side by the scalers.

A dual pen Brown potentiometer is connected to the rate meter and each of the spectrometers, and is so set that the same count rate gives the same chart deflection. This permits comparing the output of the two channels on the scintillation probes as they move over different areas of the patient's head. It is thus possible to note a significant increase in activity over one portion of the head on one side as compared with the other, and this can be readily seen on the chart.

Normal Scan

Since all tissues take up isotopes in varying concentrations, the rapidity of appearance and the concentration of the isotope is dependent upon the affinity of the tissue for the selected substance and the natural barriers that exist. Under ordinary biological conditions, therefore, it was possible to map a normal distribution for RISA over the human skull.

Since, in general, albumin is concentrated in the blood, the portions of the human anatomy with the largest blood concentration should have the highest radioactivity. In general, this was found to be true in the normal subject. On the anterior-posterior view, the lower end of the cranium was outlined by the muscles of the tongue, pharynx, larynx and mucous membranes of the nasal turbinates. The large venous superior longitudinal sinus was outlined in the center of the cranium. Posteriorly, the heavy neck muscles in their attachment at the lower end of the occipital bone, served as an outline with the superior longitudinal sinus again being prominent in the center superiorly. Laterally, over the top of the skull, there was a cap owing to radiation within the gales aponeurotica and the superior longitudinal sinus, and inferiorly because of the frontal, temporal, sternocleidomastoid and lateral musculature of the neck. Fortunately, therefore, the cerebral hemispheres were more or less outlined as areas of decreased activity. Though this area of decreased activity in the cerebral hemispheres made identification of neoplasms easy here, the concentration below this made deep midline cerebral tumors and deep posterior fossa tumors difficult.

The normal scan was statistically analyzed in 15 subjects, and if the scan was unequal, this permitted one to judge at the 95 per cent confidence limit that the scan was abnormal. It was necessary that this difference show up in two or more projections before this confidence limit could be set.

Results

In the original investigation on this apparatus, 179 successive scans were used. There were 89 negative and 90 abnormal scans. The scans were confirmed as abnormal in the case of neoplasms within the brain, if such abnormality was seen in operation or at postmortem examination. In the case of metastatic neoplasms to bone, such abnormality was confirmed

by erosion in roentgenograms, and in major vascular accidents to the brain it was said to be confirmed by subsequent atrophy as demonstrated by pneumoencephalography or at postmortem examination. Negative scans were declared confirmed if so found by the surgeon at operation, or by the pathologist at postmortem examination. With these criteria, of the 179 scans 106 were confirmed. In the confirmed group the accuracy rate was 86.6 per cent. There was a false negative group (14 of the 179 scans) or a failure incidence of 7.8 per cent. If all the unconfirmed cases were missed, there would be a minimal accuracy rate of 51.1 per cent; if all were confirmed, a maximum accuracy rate of 92.2 per cent. It is highly improbable that all these cases were missed, since many of these patients in whom the scan was read as negative were sent in as having "possible pathology within the cranium," but there were not sufficient clinical criteria for surgical exploration or pneumoencephalography or arteriography. Only time will answer this question.

Of the 14 cases that were improperly recognized by this technic 2 were false positive, and 12 false negative. Of the false negatives, 2 were done early in the study, using zinc 65 as the isotope, with collimators of early design. One was subsequently confirmed. Four were in the sella, parasella or deep cerebellar hemispheres and were definitely missed. Of the remaining 4, one was a case of syringomyelia of the cord, another had three small hemorhages at postmortem examination two weeks after the scan, another had multiple small metastases at postmortem examination, and the last had previously had removal of an astrocytoma and so must be counted a miss.

Though the usefulness of this machine has been proved by these figures, all the potentialities have not been explored and even more accurate determinations may be possible with more use and improved technic. Already positive results have been obtained when results of pneumoencephalography and arteriography were negative one week previously, equivocal pneumoencephalograms have been confirmed and positive localization of neoplasms that a neurosurgeon could not see grossly at the time of craniotomy have been made by use of this machine.

Summary

An instrument for outlining radioactive material in brain neoplasms and thus a new medical diagnostic tool has been described. By this technic the morbidity and mortality rates, and necessity for hospitalization required by the older technics of arteriography and pneumoencephalography are avoided. A confirmed accuracy rate of 86.8 per cent has thus far been achieved.

References

1. Shy, G. M., Bradley, R. B. and Matthews, W. B.: External Collimation Detection of Intracranial Neoplasia with Unstable Nuclides, Edinburgh, Scotland, E. & S. Livingston, Ltd., 1958.

2. Moore, G. E., Peyton, W. T., Hunter S. W., and French, L. A.: The clinical use of sodium fluorescein and radioactive diiodofluorescein in the localization of tumors of the central nervous system. Minnesota Med. 31:1073 (Oct.) 1948.

3. Selverstone, B., Sweet, W. H., and Ireton, R. J.: Radioactive potassium; new isotope for brain tumor localization. S. Forum (1950) Pp. 371-375, 1951.

4. Ashkenazy, M., Davis, L., and Martin, J.: An evaluation of the technic and results of the radioactive diiodo-fluorescein test for the localization of intracranial lesions. J. Neurosurg. 8:300 (May) 1951).

5. Belcher, E. H., Evans, H. D. and de Winter, J. G.: Use of radioactive diiodofluorescein for the attempted localization of brain tumors. Brit. M. Bull. 8:172, 1952.

6. Sweet, W. H. and Brownell, G. L.: Localization of intracranial lesions by scanning with positron-emitting arsenic. J.A.M.A. 157:1183 (Apr.) 1955.

7. Francis, J. E., Bell, P. R., and Harris, C. C.: Medical Scintillation Spectometry, Nucleonics 13:80 (Nov.) 1955.

Critique of Oral Hypoglycemic Agents*

• Although the oral drugs have a limited use in the control of hyperglycemia, their introduction has stimulated research into many unsolved problems of diabetes mellitus.

IRVING SINGER, M. D.
Lake Charles

THE introduction and subsequent widespread use of the hypoglycemic sulfonylureas has been of inestimable comfort and convenience to many diabetic individuals. In addition, and perhaps more important, study of the mode of action of these drugs has necessitated re-examination of what is known of the basic biochemical mechanisms of diabetes mellitus and has stimulated new research approaches to the many unsolved basic problems of this complex disease.

Biguanidine Compounds

An additional result of the success of the sulfonylureas has been the stimulation of study of other compounds, unrelated chemically to the sulfonylureas, which have hypoglycemic properties. Among these, the biguanidine compounds have received the greatest attention and are currently undergoing very active clinical and laboratory investigation. These compounds are distant chemical cousins of the diguanidine, Synthalin, which enjoyed a temporary vogue in diabetic therapy of the late 1920's. Use of Synthalin was abandoned because of its toxicity. The biguanidine chemical structure would appear to be inherently much less toxic than that of Synthalin as evidenced by the wide margin of safety noted with the antimalarial biguanidine, Paludrine. Unlike the sulfonylureas, the biguanidines appear to be hypoglycemic even in the absence of insulin and of pancreatic beta-cells. Their hypoglycemic action is believed to be due to an inhibitory effect on certain respiratory and oxidative enzymes resulting in decreased gluconeogenesis, decreased hepatic glucose output, and increased anaerobic glycolysis with the net effect being a decrease in blood sugar levels.[1-4] The biguanidines, therefore, are not substitutes for insulin in the sense of reproducing its actions, and they do not stimulate insulin production, enhance its action, or inhibit its degradation.

In clinical trials, the biguanidines have been found to be effective in both juvenile and maturity-onset type diabetes,[1, 2] They appear to have a special usefulness when administered in conjunction with insulin to "brittle" diabetics subject to wide swings in blood sugar concentration and frequent insulin reactions.[1, 3] It has been possible in a small number of such cases to decrease insulin requirements by one-half to two-thirds by administration of 200 to 400 mgm, of DBI (phenylethylbiguanidine), thus avoiding insulin reactions while maintaining reasonable control of the diabetes.[5] Combinations of phenylethylbiguanidine plus a sulfonylurea have been employed in a small group of patients in whom sulfonylurea therapy alone was unsuccessful. An additive effect with no increase in toxicity was noted.[6]

However, despite the absence so far of serious toxicity, the biguanidines presently under study appear to have a very limited field of usefulness because of the high incidence of gastrointestinal distress encountered with their use. Gastrointestinal symptoms have occurred in up to 75 per cent of cases treated and have been of such severity as to require stopping therapy in many instances.[3] Nausea, vomiting, diarrhea, and anorexia have occurred early in the course of treatment, and in some pa-

* Presented at the Seventy-ninth Annual Meeting of the Louisiana State Medical Society, in New Orleans, May 5, 1959.

tients who escape these early symptoms a peculiar late effect appears after four or more weeks of therapy consisting of weight loss, weakness, lethargy and malaise which is relieved by discontinuing the biguanidine therapy.[2] Acidosis in the absence of hyperglycemia and glucosuria has been reported as occurring during the use of biguanidine therapy.[4]

The biguanidines have been described as "enigmatic compounds which are discouraging because of high incidence of side effects and rewarding when an otherwise unstable diabetic with almost incapacitating insulin reactions becomes better regulated on a lower dose of insulin plus "DBI".[3] A definite, though limited, usefulness in selected cases of severe diabetes appear to be the role these drugs will assume in clinical medicine.

Sulfonylureas

The sulfonylureas have been clearly established as effective hypoglycemic agents in a large proportion of cases of maturity-onset type diabetes, particularly those cases wherein insulin requirements are relatively low and stable.

The details of clinical use of the sulfonylureas have been fairly well defined. There is a tendency to prescribe tolbutamide in divided daily doses, in distinction to the original loading doses technique.[7, 8] With chlorpropamide and metahexamide, a single daily dose seems to suffice as these compounds are not destroyed and excreted as rapidly as tolbutamide — a characteristic which seems to be the major difference between these newer therapeutic agents and tolbutamide.

The limitations of the sulfonylureas are well known by now to all who treat diabetics. These drugs are generally agreed to be ineffective as hypoglycemic agents in young and/or severe diabetics, and in the presence of ketosis. Isolated case reports of a beneficial effect of tolbutamide upon cases of labile diabetes and insulin-resistant diabetes are difficult to evaluate in view of the intrinsic unpredictability of the insulin requirements in such cases. In this report, a considerable placebo effect of tolbutamide has been demonstrated in double-blind studies.[9] This placebo effect has not received the attention it probably should in many clinical reports on the efficacy of this agent. Similarly, the "increased sense of well-being" described in some reports is hard to evaluate without full consideration of the psychological factors involved in substitution of a pill for the needle.

Continued experience with the most widely used sulfonylurea, Tolbutamide, has indicated that up to one-third of patients placed on the drug relapse at some time after the first thirty days of therapy.[7, 8] These cases have been called "secondary failures" in distinction to cases in which an unsatisfactory clinical response within the first few weeks of attempted oral therapy has led to abandonment of the trial. The secondary failures are due in large part to dietary deviations and infractions, but a "true" secondary failure rate of about 7 per cent does exist.[8] The cause of these true secondary failures is obscure. Insulin requirement after secondary failure is about the same as before oral treatment—suggesting that pancreatic beta-cell injury or exhaustion as a result of the oral treatment is not the causative factor. The placebo effect of tolbutamide referred to above has been suggested to be a possible explanation for some of the secondary failures.[9] That is, the possibility is raised that tolbutamide was not really effective in the first place in some cases, but that placebo effect was observed and initially interpreted as a successful response.

Diet

The high total secondary failure rate has served to reemphasize the continued and fundamental value of the dietary regime in the management of diabetes mellitus. Diet is all important in therapy with sulfonylureas. In the case of insulin treatment, dietary indiscretions can be counterbalanced to some extent by administration of a large dose of insulin. This is not true with the sulfonylureas — an increase in

dosage will not allow an increased food intake.

Side Reactions

The relatively low incidence of acute toxicity encountered with the sulfonylureas seems well established. Toxic reactions have occurred in something less than 3 per cent of cases and have, in general, been of minor importance.[10] Skin reactions have been most commonly reported. Gastrointestinal symptoms have been noted to occur particularly in patients with a previous history of such symptoms, and the exacerbation of duodenal ulcer in two cases coincident with tolbutamide administration has led to the suggestion of a need for caution in use of these drugs in the presence of gastrointestinal disease.[11] The incidence of hypoglycemia with the sulfonylureas is low, but not nonexistent.[8, 12, 13] Slight elevation of the serum alkaline phosphatase after approximately a month of tolbutamide therapy has been observed, and while not associated with any other evidence suggestive of hepatic damage may constitute a potential source of clinical confusion.[5] Intrahepatic obstructive jaundice with associated elevation of the serum alkaline phosphatase has been observed in conjunction with chlorpropamide therapy. The question of long-term hepatotoxicity must wait prolonged use of the sulfonylureas.

An unusual untoward occurrence during oral hypoglycemic drug therapy is the case in which the patient accidently swallowed a Clinitest tablet instead of a tolbutamide tablet, and developed an ulcerative lesion of the esophagus with associated severe exacerbation of diabetes.[14]

Mode of Action

The mechanism of action of the sulfonylureas has been the subject of much study. As yet, no clear-cut answer is available to the question of where and how these compounds act. Studies of alloxan-diabetic animals plus observation that pancreatectomized patients and juvenile diabetics fail to respond to sulfonylurea administration has established that functioning pancreatic beta-cells must be present for effective hypoglycemic action of the sulfonylureas to manifest itself in vivo. Most experimental support has been received by the hypothesis that these drugs act primarily by stimulating pancreatic beta-cells to secrete or release an extra amount of insulin. Such extra insulin would be expected to result in an increased peripheral utilization of glucose via the primary action of insulin to facilitate glucose transfer into muscle cells. Yet extensive and repeated studies of the usual parameters of peripheral glucose utilization have failed to reveal the expected increase following sulfonylurea administration. This seemingly leads to an impasse—a need for a source of insulin yet no observable effect of the extra insulin supply postulated to be released by the source following sulfonylurea administration.

This impasse has led to reconsideration in the laboratory of the mode of action of insulin. The results of this reconsideration have been such as to at least modify our ideas of insulin action. The demonstration that injection of insulin into the portal vein results in a hypoglycemic effect without an increase in peripheral glucose utilization,[16] and the fact that if parenterally administered insulin is given slowly enough similar results are obtained,[17] suggests that endogenously produced insulin, at least, exerts a primary effect on the liver. These facts strongly imply that the sulfonylureas do act by increasing endogenous insulin production and that the insulin so produced causes a fall in blood sugar by lowering hepatic glucose output without affecting peripheral glucose utilization. This concept has received additional support by in vitro demonstrations of a direct effect of insulin on liver carbohydrate metabolism.[7]

A direct and specific effect of tolbutamide on certain hepatic enzyme systems resulting in increased liver glycogen formation has been demonstrated.[7] This observation has explained some of the findings after acute administration of tolbutamide which differ frankly from insulin

effects. The significance at the clinical level of this effect of tolbutamide is not clear in view of the apparent necessity for presence of pancreatic beta-cells if sulfonylureas are to be hypoglycemic in vivo.

As the mode of action of the sulfonylureas gradually becomes clearer, it also becomes apparent that the study of these compounds will directly and indirectly lead to further clarification of the biochemical lesions of diabetes mellitus and of insulin actions. The studies so stimulated may well lead to contribution of much greater ultimate clinical importance than that of the sulfonylureas themselves.

Role in Therapy

While awaiting these anticipated advances in knowledge and therapy of diabetes, the sulfonylureas are being widely used. Despite the relative unanimity of opinion concerning their efficacy and limitations, there is a surprising amount of controversy concerning the role these compounds should play in clinical diabetes today and their significance in the long term management of the diabetic state. Insulin therapy, although not free of problems, will control hyperglycemia and ketosis in all diabetics regardless of age and, in addition, has beneficial effects upon protein metabolism and upon growth of childhood diabetics. A true oral substitute for insulin should be capable of reproducing all of the beneficial effects of insulin on the diabetic organism. It has never been claimed that the sulfonylureas are a substitute for insulin in this sense. However, the sulfonylureas will effectively lower the blood sugar in most cases of maturity-onset type diabetes of mild to moderate severity and these cases comprise the majority of all cases of diabetes. Should sulfonylurea therapy then be considered to be equivalent to or superior to insulin therapy in this large and important group of diabetic patients?

There are those who feel that sulfonylurea therapy should take precedence over insulin therapy in diabetics of this type wherever clinical trial of the sulfonylureas results in control of hyperglycemia. Besides the convenience of oral administration, the relative lack of hypoglycemic reactions, "smoother control" of blood sugar levels, and an intangible "feeling of well-being" are cited as advantages of sulfonylurea therapy.

At the opposite extreme are those who consider these compounds at the clinical level to be primarily an optional convenience to be used only in a relatively few cases where special conditions exist making indicated insulin therapy impractical or unduly difficult. That is, given a case of diabetes with onset after maturity and uncontrolled by diet alone, advocates of this viewpoint would substitute a sulfonylurea for insulin only if insulin could not conveniently be used because of blindness, crippling arthritis, paralysis, or other handicap.

This wide divergency of viewpoints is undoubtedly due to our incomplete knowledge of the etiology, pathogenesis, and biochemical pathology of diabetes mellitus. The question which must be resolved before we shall know which of the two extreme positions cited is more correct is whether control of hyperglycemia and control of diabetes mellitus can be considered one and the same. Superficial consideration of this question would indicate that they are not the same thing in view of insulin's relatively wide range of effects on diabetes aside from its effect on blood sugar levels. However, the investigations into the mode of action of the sulfonylureas (*vide supra*) at least suggest the possibility that a differentiation between the actions of endogencus and exogenous insulin may have to be made. In such event, the sulfonylureas might be considered as reproducing insulin activity and effects up to a limiting point, i.e., reproduction of insulin effect upon liver carbohydrate metabolism but not upon peripheral glucose utilization, growth, etc. This point of limitation may be insignificant in many diabetics. In these diabetics the sulfonylureas may control the disease in the same sense as insulin does.

The question of an actual distinction between endogenous and exogenous insu-

lin must await clarification and proof in the laboratory. The bulk of evidence at present supports the classic concept that the hyperglycemia of diabetes mellitus is due to decreased peripheral utilization of glucose as a direct result of insulin deficiency—relative or absolute. According to this classic concept, the decreased peripheral utilization is a primary metabolic defect corrected by insulin administration, and hyperglycemia is a conveniently measured laboratory sign of the underlying metabolic defect.

Because of the convenient measurability of the blood sugar level, it is commonly used as an index of degree of control of the more basic defect in glucose utilization. We are all aware of the fallacy of invariably considering alteration of a symptom or sign as correction of an underlying pathologic process. Should we not then be cautious in interpreting alterations in blood sugar levels as control of diabetes mellitus? Indeed, the point has been raised that lowering the blood sugar of a diabetic may actually be harmful to the individual if such lowering is obtained by means other than the effect of insulin on peripheral utilization of glucose.[18] This would appear to be a distinct possibility if, as some have contended, the hyperglycemia of diabetes mellitus is actually a compensatory mechanism facilitating, by mass action, the transfer of glucose into skeletal muscle cells, thereby approaching closer to the rate of glucose utilization of the nondiabetic. Unless and until the sulfonylureas are clearly shown to exert their hypoglycemic effects by favorable modification of an underlying metabolic defect, it would seem wisest for the individual clinician to employ these agents cautiously and with an expectant attitude toward further clarification and delineation of their precise role in clinical diabetes.

Only long-term studies can indicate whether use of the sulfonylureas in place of insulin will influence the incidence, degree, and time of occurrence of the degenerative complications of diabetes. Whether or not one accepts the evidence indicative of a beneficial effect of close control of diabetes, with diet and insulin, on the incidence and age of onset of these degenerative complications, our present day therapy leaves much to be desired in terms of abolishing premature arteriosclerosis and diabetic neuropathy, nephropathy, and retinitis. The resurgence of interest in investigation of both the basic lesions of diabetes and the actions of insulin, stimulated in large measure by the introduction of the sulfonylureas, should result not only in development of new oral agents for treatment of the malady but in more understanding of the pathogenesis of the long-term complications of diabetes and of therapeutic measures which will be effective in preventing their appearance or halting their progression.

Summary

The principal classes of oral hypoglycemic agents in use and/or under study today have limited, though ill defined, roles in the management of clinical diabetes. More precise definition of their position must await further clarification of their mode of action and the results of long-term studies of their ultimate effects upon the diabetic patient.

Clinicians should exercise cautious clinical judgment in the use of these drugs pending the outcome of further investigation and studies.

The long-term importance of the currently available oral hypoglycemic agents may well lie in the stimulus they have provided to research into basic biochemical lesions of diabetes and into the actions of insulin.

References

1. Goldner, Martin G.: Oral Hypoglycemic Agents, Past and Present. Arch. Int. Med. 102:5, 1958.

2. Odell, William D.: Phenylethyl-, Amyl-, and Isoamylbiguanidine in the Treatment of Diabetes Mellitus. Arch. Int. Med. 102:4, 1958.

3. Krall, Leo P., et al: Clinical Use of the Biguanidines and Their Role in Stabilizing Juvenile-Type Diabetes. Diabetes 7:6, 1958.

4. Williams, Robert H., et al: Hypoglycemic Effects of Phenylethyl-, Amyl-, and Isoamyl-Biguanidine. Diabetes 7:2, 1958.

5. Root, H. F.: Oral Hypoglycemic Agents in the Treatment of Diabetes Mellitus. North Carolina M. J. 19:8, 1958.

6. Beaser, Samuel B.: Therapy of Diabetes Mellitus

with Combinations of Drugs Given Orally. New England J. Med. 259:25, 1958.

7. Beaser, Samuel B.: Medical Progress: Diabetes Mellitus, New England J. Med. 259:11, 1958.

8. Mehnert, Hellmut, et al: J.A.M.A. 167:7, 1958.

9. Hurwitz David: Editorial. Diabetes 7:4, 1958.

10. Colwell, A. R., Sr., et al: The Clinical Use of Tolbutamide in Diabetes Mellitus: A Statement of the American Diabetes Association. Diabetes 6:3, 1957.

11. Beaser, Samuel B.: Further Experiences with the Use of Sulfonylureas in Diabetes. Ann. New York Acad. Sci. 71:1, 1957.

12. Dolger, Henry: Experience with the Tolbutamide Treatment of Five Hundred Cases of Diabetes on an Ambulatory Basis. Ann. New York Acad. Sci. 71:1, 1957.

13. Fajans, Stefan S., et al: Metabolic Effects of Sulfonylureas in Normal Men and in Various Types of Diabetic Patients. Ann. New York Acad. Sci. 71:1, 1957.

14. Silver, A. A.: Necrobiosis Lipoidica Diabetacorum Controlled Equally by Insulin and Tolbutamide (Orinase). Sinai Hospital J. 6:4, 1957.

15. Ross, E. N.: "Permeability" Hypothesis of Action of Insulin. Medicine 35:4, 1956.

16. Madison, L. L. and Ungar, R. H.: The Physiologic Significance of the Secretion of Endogenous Insulin into the Portal Circulation. 1. Comparison of the Effects of Glucagon-Free Insulin Administered via the Portal Vein and via a Peripheral Vein on the Magnitude of Hypoglycemia and Peripheral Glucose Utilization. J. Clinical Investigation 37:5, 1958.

17. Jacobs, G., et al: Action of Insulin and Tolbutamide on Blood Glucose Entry and Removal. Diabetes 7:5, 1958.

18. Stetten, DeWitt, Jr.: Editorial. Ann. of Int. Med. 46:5, May 1957.

Discussion

Douglas L. Gordon, M. D. (Baton Rouge): Dr. Singer has very excellently summarized the tremendous amount of material on this subject. These agents have been so recently used clinically as well as in research that it is quite difficult to predict the role for them in the future. I feel that at present their chief value lies in the research interest they have stimulated in the physiologic action of these drugs and in diabetes mellitus itself. In discussions with other physicians, the question regularly has come up with regard to the actual number of patients each physician is treating with the hypoglycemic agents in his own practice. In our area, at least, each physician has "two or three" patients on these drugs; whereas they have many taking insulin.

The best summary of the use with these drugs, I have heard, was during a recent panel discussion at the American College of Physicians' Meeting in Chicago. Dr. Garfield Duncan commented on the idealistic and the realistic use of these drugs. Idealistically, he felt 80 per cent of all diabetics were simply obese and did not require any treatment other than weight reduction. Five percent were juvenile diabetics, so not over 15 per cent of the overall number of diabetics would be candidates for these drugs. Allowing for those who would not respond to it probably only 10 per cent of the total diabetic population would use them. However, he felt from a realistic standpoint that probably 80 to 90 per cent of the diabetes were using the hypoglycemic agents.

In general, I would feel that any patient could be allowed the opportunity of a trial on these drugs if he or she requested it. If the patient responds to the therapy, then he has achieved a simpler and less troublesome method of controlling his diabetes. If he does not respond, then certainly no harm has been done by the therapeutic trial.

The only comment which I would make regarding any of these specific agents would concern DBI. It appears that its chief usefulness will be in possibly stabilizing the so-called brittle diabetic. In handling this situation it seems that adding DBI to a slightly smaller dose of insulin than previously required is the method of choice rather than attempting to control the diabetic patient entirely with the oral hypoglycemic agent.

Lastly, the most important point to be made in this discussion is to re-emphasize that the good principles of diabetic therapy such as maintenance of normal body weight, good dietary control, freedom from hyperglycemia and excessive glycosuria as well as freedom from hypoglycemic reactions should be achieved. If these principles are strictly adhered to there then will be relatively few instances for the actual use of these agents. In addition, the patients using the hypoglycemic drugs will be under much better physiologic control. Unfortunately, many patients have been given the drug to take orally and have neglected the diet, weight, exercise, urine checks for sugar, and have become uncontrolled diabetics. The lack of good control should certainly be frowned upon and the maintenance of excellent diabetic control utilizing the standard basic principles, whether insulin or the hypoglycemic oral agents are used, should be the chief point which one takes with him after listening to this critique on hypoglycemic agents.

Enteric Intussusception, A Postoperative Complication; A Case Report

• The etiology of intussusception is undetermined and the treatment may be conservative or surgical.

J. E. ISAACSON, JR., M. D.
New Orleans

EDGAR FEINBERG, M. D.
Bogalusa

H. REICHARD KAHLE, M. D.
New Orleans

MANY theories have been advanced regarding the etiology of intussusception. Most theories stemmed from the findings of Nothnagel,[1] in 1898, who postulated that intussusception resulted from intestinal spasm. He suggested that the contracted portion of the intestine (the intussusceptum) was propelled into the lumen of the normal intestine (the intussuscepiens) in a manner similar to a bolus of food. Others believe that intussusception results from excessive mobility of the intestinal tract; pathological abnormalities of the intestines such as enlarged lymphoid follicles, Meckel's diverticulum, and polyps; and a change of diet. However, according to Gross [2] and Orloff,[3] in most cases, no definite etiological agent or reason can be determined.

Types of Intussusception

The basis of classification of intussusception depends upon the relationship between the intussusceptum and the intussuscepiens. When the intussusceptum and the intussuscepiens are both small intestine, the intussusception is known as enteric. The enteric form includes duodenoduodenal or duodenojejunal (Lempke [4]), jejunojejunal, jejunoileal or ileoileal types. The ileocolic variety occurs when a portion of the ileum invaginates into the large bowel. When only the colon is involved, the classification is known as colocolic. In children, the ileocolic variety is the most common form, then the colocolic forms.

Treatment of Intussusception

The treatment of this disorder is based on the reduction of the intussusceptum from the intussuscepiens. This may be accomplished using hydrostatic pressure or manual reduction.

Hydrostatic pressure is administered under direct visualization of the colon during fluoroscopic examination, while a barium enema is being administered, first described by Hipsley [5] in 1937. Gross [2] is opposed to this technique since he feels that a considerable number of patients still come to surgery. Very often the attending physician is uncertain of the results, thus wasting valuable time depleting the patient's margin of reserve, which Kahle and Thompson [6] feel is the most common cause of death in this disease. Reduction past the ileocecal valve may be incomplete. Any existing polyp or diverticulum will thus be overlooked. Great care must be used while administering the enema, for the possibility of rupture of the bowel is a dangerous complication of this form of therapy.

The operative procedure consists of laparotomy with reduction of the intussusception by gently milking the intussusceptum backward with gentle compression of the intussuscepiens. At this

From the Independent Surgical Service of the Charity Hospital of Louisiana at New Orleans and the Surgical Service of the Washington-St. Tammany Charity Hospital in Bogalusa, Louisiana.

time one can examine the involved intestine to determine the presence of underlying pathology as an etiological agent or the presence of damage to the intestine such as gangrene. These conditions can then be corrected by appropriate means at the time of surgery.

Report of Case

L.D., a 3-year old negro female was brought to the clinic of the Washington-St. Tammany Charity Hospital with a history of generalized intermittent abdominal pain for four and one-half hours. The patient had been constipated for the previous two or three days. On the day of admission, she had general malaise and vomited once.

Examination revealed the following abnormalities: Temperature 103° (R); pharynx slightly injected; lungs clear to percussion and auscultation; abdomen moderately distended with hypoactive bowel sounds and occasional peristaltic rushes; no rebound tenderness, no rigidity; generalized tenderness was present; and rectal examination was negative.

Laboratory work was normal except for the following: Hemoglobin 8.6 gms., white blood count 18,700, polymorphonucleoleukocytes 75, lymphocytes 25. Urinalysis revealed 5-10 WBC/hpf (catheterized specimen).

Nasogastric suction was begun and the patient placed on intravenous fluids and antibiotics. The diagnosis of acute gastroenteritis versus early intestinal obstruction was entertained.

On the morning following admission (fourteen hours), some rales were heard in the chest and the x-ray picture of the chest resembled one of bronchopneumonia. However, no bowel sounds were heard. Temperature continued to be elevated. The abdomen was increasingly tender but no localized point of tenderness could be found. It was decided that the patient now had an acute surgical abdomen, probably resulting from an acute appendicitis, as well as the pneumonitis.

Sixteen hours after admission, an exploratory laparotomy revealed mesenteric lymphadenitis but normal intestine and appendix. No evidence of diverticula or polyps could be found. An appendectomy was done at the time. Postoperatively, nasogastric suction was maintained and the patient given tetracycline, and 300 cc. of blood.

Normal bowel sounds were heard the next morning so the nasogastric suction was discontinued and the patient begun on surgical liquids by mouth. The maximum temperature this day was 103° (R). On the second postoperative day the patient passed flatus and was given full liquid diet orally. In the afternoon, the abdomen became distended and again bowel sounds were absent. Nasogastric suction was reinstituted. The next day bowel sounds returned so the nasogastric suction was discontinued and the patient given water by mouth.

On the morning of the fifth postoperative day, the patient's abdomen again became distended. No bowel sounds could be heard so the nasogastric suction was restarted along with intravenous fluids. At 1:00 P.M., the patient seemed improved and bowel sounds were again heard. However, the patient was continued on suction. It was felt that the patient probably had a paralytic ileus secondary to the pneumonia. She continued to improve until the sixth postoperative day when, at noon, the abdomen became distended and bowel sounds were absent. Under fluoroscopic examination, a Miller-Abbott tube was inserted until the tip of the tube reached the pylorus of the stomach. At this time, fluid and gas were noted in the small bowel. She apparently improved, slightly, as the Miller-Abbott tube advanced for the next twelve hours; then, there was no further drainage. The patient was taken back to radiology where the tube was found coiled in the stomach. At this time the decision was made to bring the patient back to surgery.

Exploratory laparotomy revealed a six inch jejunojejunal type of intussusception which was reduced by gentle compression of the intussuscepiens. The remainder of the jejunum was decompressed and the abdomen closed in layers.

The postoperative course was uneventful. Oral surgical liquids were begun on the first postoperative day and diet progressively increased. On the seventh postoperative day, antibiotics were discontinued, and the patient was discharged from the hospital the next day.

Summary

This case represents an example of postoperative intestinal obstruction caused by jejunojejunal intussusception in a three year old child. Although the intussusception in this case, may have resulted from irritability of the bowel secondary to an enteritis, no definite etiological agent can be attributed to this particular intussusception.

The treatment, surgical intervention with the reduction of the intussusceptum, proved satisfactory.

References

1. Nothnagel, quoted by Orloff.[3]
2. Gross, Robert E.: The Surgery of Infancy and

Childhood. Pps. 281-300. Philadelphia and London: W. B. Saunders Company, 1953.

3. Orloff, Marshall J.: Intussusception in children and adults, Internat. Abs. Surg. 102:313 (April) 1956.

4. Lempke, Robert E.: Intussusception of the duodenum, Ann. Surg. 150:160 (July) 1959.

5. Hipsley, P. L.: The treatment of intussusception, Surg. 1:825 (June) 1937.

6. Kahle, H. Reichard, and Thompson, Clarence T.: Diagnostic and therapeutic considerations of intussusception, Surg., Gynec. and Obstet. 97:693 (December) 1953.

Historical Note

During the last two or three weeks, immigrants, chiefly Irish, have been flocking to our shores in great numbers; and as might be expected, many of those, who embark for our port, sicken and die during the voyage, of ship or typhoid fever—the result of a crowded state of the vessel, a limited supply of provisions, of a bad quality and neglect of personal cleanliness.

In the first place, these vessels are too much crowded; they should not be allowed to bring more than one third their usual number. The shipping agents at Liverpool, and the ports of Ireland, regardless alike of the comforts and lives of these people, drive them on board the vessel, like "sheep for the shambles," too often illy provided with the comforts necessary for sustaining healthful existence, and many of them, at the time of their embarkation, with the seeds of disease in their systems.

New Orleans M. & S. J. 5:670 (March) 1849.

Urinary Diversion

• The author reviews the many attempts at anatomical substitution of the normal urinary outlet, lists the indications, and describes the technique employed.

B. HOLLY GRIMM, M. D.
New Orleans

THE changing of the urinary outlet has posed a serious and perplexing problem to all surgeons who have encountered the need for interruption of the continuity of the normal urinary system. The ideal for which we all strive when urinary diversion is indicated would be simulation of the normal urinary system. That is, voluntary control of the urinary and fecal streams, which exist from a reservoir that permits intermittent emptying. Johnson's criteria included in addition separation of the fecal and urinary streams, an absence of reabsorption of urinary waste products, no artificial devices or orifices, the permission of cystectomy if indicated, and the ease of cystoscopic examination.

Historical

Since John Simon, a British surgeon, attempted to form a fistulous tract between an extrophy of the bladder and the rectum, in 1852, many surgeons have tried many and varied procedures on both animals and humans. Smith, in 1878, disconnected the ureters from the bladder and transplanted them. In 1888, Tizzoni and Foggi of the Royal University of Bologna successfully anastomosed the ureters to an isolated loop of ileum and this to the bladder neck in a dog. Using cadavers, Lotheison (1889) formed a rectal pouch by pulling the anterior rectal wall down through the anus. Also, using cadavers, Giordano (1892) performed a sigmoid colostomy and then attached the ureters to the isolated rectal pouch. Chaput, in 1894, discussed a type of ileal bladder but decided it was not practical. Mauclaire, in 1895, performed a sigmoid colostomy and transplanted the ureters into an isolated rectal pouch on dogs. Foges, in a report (1898), described an operation by R. Gersuny, a Viennese surgeon, in which the ureters were implanted into the blind rectosigmoid pouch and the proximal end pulled through the anal sphincter anterior to the anus. In 1898, Von Mikulicz utilized an isolated segment of bowel for enlargement of the bladder in humans. Remedi, (1905) and Kronig (1907) utilized a blind rectal pouch and a perineal colostomy. Berg (1907) reported 5 cases of ureteroileosigmoidostomy for bladder extrophy of which 2 were successful. Verhoogen (1908) unsuccessfully fashioned an ileocecal segment into a bladder substitute allowing the appendix to substitute for the urethra. In 1910, Makkas successfully performed this procedure. Heitz-Boyer and Hovelacque (1912) described a Gersuny type operation done by Marion and differing primarily by amputation of the coccyx and the placement of the perineal colostomy posterior to the anus.

In 1917, Kotzenberg reported an attempted Gersuny procedure. In this same year Neuhof was using free fascial grafts to repair segmentally resected animal bladders. Kirscher's attempt of this in a man with bladder extrophy was unsuccessful. Roosing (1918) reported a successful attempt of a rectosigmoid bladder and colostomy for extrophy of the bladder. Scheele (1923) and Sebening (1932) both reported on the use of ileal segments to enlarge the bladder. Lay (1925) attempted to use a gall bladder for a urinary bladder without success.

This trend of investigation and ap-

* Presented at the Seventy-ninth Annual Meeting of the Louisiana State Medical Society, in New Orleans, May 6, 1959.

proach to the problem was interrupted in 1928 when Robert C. Coffey perfected his ureterointestinal anastomosis to the intact bowel. However, continued follow-up of these patients revealed recurrent infection, stricture at the anastomotic site, and hyperchloremic acidosis. Cordonnier (1945), Nesbit (1945), Leadbetter (1950), and Mathisen (1953) have all attempted to eliminate these dire complications by different techniques while holding to the theory of Coffey of implantation of the ureters to the intact bowel, but none have been entirely satisfactory.

Bisgard (1943) and Rubin (1949), working with dogs, successfully attached an isolated segment of the sigmoid to the bladder neck.

Beginning in 1950, there have been many excellent reports on all phases of urinary diversion with each method having many advocates. Bricker used the isolated loop of ileum. Gilchrist, Merricks, Hamlin and Reiger utilize the cecum for a reservoir and the antiperistalsis of the terminal ileum as a continent urethra which requires intermittent catheterization for emptying; Lowsley (1953) and Levitski (1953) separately reported procedures for separating the fecal and urinary streams and utilizing the anal sphincter for continence.

At present the isolated ureteroileostomy is probably more widely used than the other bladder substitution procedures and the following discussion is primarily concerned with this operation.

Indications

In this era of increasing refinement of anesthesia, and surgical techniques, of the utilization of blood and antibiotics, the advocation of radical surgery has become more an everyday occurrence than in the past.

It is interesting to note that reference to actuarial tables reveals that an individual who has reached the age of 60 years has a life expectancy of 14.5 years, at 70 years a life expectancy of 8.9 years and at 80 years an expectancy of 5.0 years. These facts certainly have a bearing on the recommendations of the attending physician if there is a good chance of cure or complete relief of pain in the treatment of malignancy.

Malignant disease for which urinary diversion has been performed include:

Pelvic exenteration for cancer of the cervix or uterus with local invasion.

Cancer of the rectum with local invasion.

Cancer of the vagina with local invasion.

Advanced cancer of the bladder either in an attempt to cure or for palliation with regard to excruciating, intractable pain.

Cancer of the prostate with local invasion.

Cancer of the urethra, particularly in the female.

The nonmalignant conditions for which urinary diversion may well be advocated include:

Bladder extrophy.

Incontinent epispadius.

The extremely contracted bladder of interstitial cystitis or tuberculosis.

The neurogenic bladders which have resisted all other forms of correction.

Fistulas.

- Bilateral ureterovaginal.
- Intractable vesicovaginal.
- Water pot perineum.

Postirradiation stricture of the ureterovesical junction or lower ureteral stricture.

Irreparable urethral obstruction or injury.

Previous ureterosigmoidostomy with progressive renal damage.

As in all operative procedures each case is subject to individualization. However, most of these patients have accepted their new situation and have made happy adjustments.

The Technique

The technique described is essentially that employed by Bricker and later by Cordonnier. The site of the ileostomy is marked on the abdomen prior to draping the patient. Through a left paramedian incision a general examination of the ab-

domen is performed. The ureters are then identified as they cross the iliac vessels, isolated for 3 to 4 centimeters distally, severed and tagged with a black silk suture for ease of identification later. A 6 to 8 inch segment of terminal ileum is isolated. The segment is usually removed approximately 6 inches from the ileocecal valve, but this is not an absolute requirement. The blood supply is meticulously preserved both to the isolated segment and the remaining bowel. The continuity of the ileum is then restored by end-to-end anastomosis, using two layers of fine nonabsorbable sutures. The proximal end of the isolated loop is closed with a running suture of fine catgut and reinforced with nonabsorbable interrupted sutures. At this point any previously contemplated pelvic dissection is accomplished. Attention is again turned to the isolated loop and the ureters. The ureters are attached to the posterior surface of the segment near the antimesenteric border by an end to side, mucosa to mucosa anastomosis using interrupted fine absorbable sutures. The distal end of the loop is then brought out through a window in the abdominal wall and the mucosa attached flush to the skin with absorbable sutures. Care is taken to close any opening through which bowel might herniate and obstruct. A Rutzen bag is applied to the stoma before the patient leaves the operating room and gastric suction keeps the bowel decompressed.

Complications

The general cardiac and pulmonary complications attendant with all surgery are of course present in this procedure. However, the discussion is limited to those directly attributable to this operation. These may be divided into early and late manifestations depending upon their onset following surgery. The early complication that have been reported are:

Death which is directly attributable to the operation. Postoperative ileus has been greatly reduced by the introduction of gastric suction at the termination of the procedure and before the patient leaves the operating room.

Wound dehiscence has occurred even though nonabsorbable sutures are used in closure.

Temporary anuria has been reported and is usually associated with shock during the operation. Urinary sepsis (pyelonephritis) has not occurred as frequently as had been expected and every effort is made to sterilize the urine prior to operation.

Herniation of the bowel between the left ureter and the ileal conduit was reported in the infancy of the operation. The careful attention of obliterating the opening existent from the point of entrance of the ureter through the sigmoid mesentary to the anastomotic site has eliminated this hazard.

There is frequently a temporary hydronephrosis immediately following surgery which subsides shortly.

Azotemia and electrolyte imbalance do occur but careful attention to daily chemistries has minimized the danger.

The development of nonviable bowel in either the conduit or the ileum appeared so formidable initially that great care was exercised in the preservation of the blood supply, and so far has not occurred.

Intestinal obstruction is always a risk anytime that the peritoneum is violated.

Urinary leakage at the anastomotic site if draining to the outside should be given a chance to close spontaneously. Fecal fistula may also close spontaneously.

Stricture formation may occur at the skin opening or as the conduit passes through either the peritoneum or the fascial plane and may be prevented by the intermittent passage of one finger through the stoma.

The development of dermatitis surrounding the stoma can be very exasperating; it is frequently the result of a poor fitting ileostomy bag. However, rest from the ileostomy bag, application of a bland protecting ointment and heat will usually suffice.

The late complications reported are:

Stenosis of the ileal stoma which requires surgical revision.

Progressive unilateral hydronephrosis,

the cause of which may or may not be evident on pyelographic study, demands exploration and correction. Pyelonephritis, may also develop at a late date.

Incisional hernia and intestinal obstruction require surgical intervention.

The appearance of recurrent carcinoma is always a fear when dealing with malignant disease.

Progressive eversion of the ileal conduit has been reported. However, placement of retaining sutures between the loop and the peritoneum is a preventive measure.

Peristent mucus formation is a frequent occurrence, but of no serious import.

Urinary calculus has developed, as has obstruction from too long an ileal conduit.

Stenosis of the ureteroileal anastomosis is of rare occurrence.

Hematuria and stasis of urine have occurred from too long a conduit or stenosis at the stoma. Effective drainage will temporarily correct the condition.

Verrucae formation at the stoma site is usually the result of an ill-fitting bag.

Summary

A review of the history of urinary diversion is presented.

The indications for the procedure are listed. Bricker's technique for ureteroileostomy with minor changes is reviewed and the complications attendant upon the operation are discussed.

References

Berg, J.: Nord. Med. Ark. Stockholm, Surg. Sec. No. I. Abstracted in J.A.M.A., 49:1409, 1907.

Bisgard, J.: Ann. Surg. 117:106, 1943.

Bricker, E. M.: Am. Surgeon. 18:654, 1952.

Bricker, E. M.: Surg. Clin. N. America, pp. 1117-1129, (Aug.) 1956.

Coffey, R. C.: J.A.M.A. 99:1320, 1932.

Cordonnier, J. J.: J. Urol. 74:789, 1955. 77:714, 1957.

Cordonnier, J. J.: Surg., Gynec. & Obstet. 88:441,1949.

Delev, N.: J. Urol. 79:828, 1958.

DeRosa, F. P.: J. Urol. 79:834, 1958.

Foges: Wein klin Wchschr. No. 43, p. 990, 1898. (Cited by Hinman and Weyrauch)

Gilbert, M. G., Pace, W., III, and Izant, R. G.: J. Urol. 80:237, 1958.

Giordano, D.: Riforma medica 8(ii): 495, 1892. (Cited by Rubin)

Heitz-Boyer, M. and Hovelacque, A.: J. d'urol. 1:237, 1912.

Hinman, F., Jr., Oppenheimer, R.: J. Urol. 80:448, 1958.

Hinman, F., Weyrauch, H. M., Jr.: Tr. Am. Assoc. G-U Surgeons. 29:15, 1936.

Jay, J. B., Borski, A., and Kimbrough, J.: J. Urol. 74:109, 1955.

Johnson, T. H.: J. Urol. 76:380, 1956.

Johnson, Wm.: Brit. J. Urol. 30:310, 1958.

Kotzenberg: Ztschr. f. Urol. Chir., 3:108, 1917. (Cited by Shoemaker)

Kronig: Zentralbl f. Gynak., 31:559, 1907. (Cited by Shoemaker)

Lay, E. B.: Arch. Ital. di. Chir., 11:333, 1925. (Cited by Shoemaker)

Leadbetter, W. F. and Shaffer, F. G.: J. Urol. 65:818, 1951. 75:470, 1956.

Levitski, V.: Am. J. Surg., 85:91, 1953.

Lotheison, G.: Wein. klin. Wchnschr, 12:883, 1899. (Cited by Shoemaker)

Lowsley, O. S. and Johnson, T. H.: J. Urol. 73:83, 1955.

Makkas, M.: Zentralbl. f. Chir., 37:1037, 1910. (Cited by Shoemaker)

Mathisen, W.: Surg., Gynec. & Obstet. 96:255, 1953.

Mauclaire: Congres Francais de Chir., pp. 546-552, 1895. (Cited by Hinman and Weyrauch)

Merricks, J. W. and Gilchrist, R. K.: J. Urol. 71: 591, 1954.

Nash, D. F. E.: Brit. J. Urol. 28:387, 1956.

Nesbit, R.: J. Urol. 61:728, 1949.

Neuhof, H.: Surg., Gynec. & Obstet. 24:383, 1917.

Remedi, V.: La. Clin. Chir. 14:608, 1906. (Cited by Hinman and Weyrauch)

Roosing, T.: Hospitalstidende Vol. 59, No. 46, p. 1109; 1916. Abst. in Zentralbl. f. Chir. No. 47. p. 886, 1918. (Cited by Hinman and Weyrauch)

Rubin, S.: J. Urol. 60:874, 1948.

Scheele, K.: Beitr. klin Chir. 129:414, 1923. (Cited by Shoemaker)

Sebening, W.: Proc. Staff. Meeting, Mayo Clinic, 7: 123, 1932.

Shoemaker, W. C.: J. Urol. 74:453, 1956.

Simon, J.: Ectopia Vesicae, Lancet, 2:568, 1852.

Tizzoni and Foggi: Zentralbl. f. Chir., 15:921, 1888. (Cited by Rubin)

Verhoogen, J.: Ass. Franc. l'urol., 12:352-365, 1908. (Cited by Hinman and Weyrauch)

The Journal of the Louisiana State Medical Society

Established 1844

Published by The Journal of the Louisiana State Medical Society, Inc. under the jurisdiction of the following named Journal Committee:

W. Robyn Hardy, M. D., Ex-Officio
E. L. Leckert, M. D., Chairman
C. M. Horton, M. D., Vice-Chairman
Sam Hobson, M. D., Secretary
Edwin H. Lawson, M. D.
J. E. Knighton, M. D.

EDITORIAL STAFF

PHILIP H. JONES, M. D., Editor

COLLABORATORS—COUNCILORS

Felix A. Planche, M. D.
J. E. Clayton, M. D.
Guy R. Jones, M. D.
C. E. Boyd, M. D.
Henson S. Coon, M. D.
John L. Beven, M. D.
J. Y. Garber, M. D.
R. E. C. Miller, M. D.

C. GRENES COLE, M. D., General Manager
1430 Tulane Avenue

Subscription Terms: $4.00 per year in advance, postage paid, for the United States; $5.00 per year for all foreign countries belonging to the Postal Union.

News material for publication should be received not later than the eighteenth of the month preceding publication. Orders for reprints must be sent in duplicate when returning galley proof.

Manuscripts should be addressed to the Editor, 1430 Tulane Ave., New Orleans, La.

The Journal does not hold itself responsible for statements made by any contributor.

Editorial

Employment of Physicians by Hospitals

The problems connected with physician-hospital relationships have been slowly increasing for decades and have been of greater difficulty in the last ten years. Disputes among the parties to this relationship have many angles.

Acute concern has been manifested by organized medicine over the employment of physicians by hospitals and the bearing that such employment has upon the independence of the physician, the quality of medical care, and the fact that this tends to lead to the practice of medicine by hospitals.

In 1950, these matters were given profound study and consideration by a special committee of the AMA. The famous Hess report, which resulted, was accepted by the House in 1950. The provisions of this report were further amplified in 1951, in a resolution which has come to be known as "Guides for the Conduct of Physicians in Relationships with Institutions". These "Guides" included three principles which were suggested as the basis for adjusting controversies over relations of physicians with hospitals. These three principles are:

"1. A physician should not dispose of his professional attainments or services to any hospital, corporation or lay body by whatever name called or however organized under terms or conditions which permit the sale of the services of that physician by such agency for a fee.

"2. Where a hospital is not selling the services of a physician, the financial arrangement if any between the hospital and the physician properly may be placed on any mutually satisfactory basis. This refers to the remuneration of a physician for teaching or research or charitable services or the like. Corporations or other lay bodies properly may provide such services and employ or otherwise engage doctors for these purposes.

"3. The practice of anesthesiology, pathology, physical medicine and radiology are an integral part of the practice of medicine in the same category as the practice of surgery, internal medicine or any other designated field of medicine."

Adherence to these principles has placed organized medicine in opposition to hospital boards and hospital associations, in

many instances. As it now appears, some of the hospital boards and the American Hospital Association appear to believe that the hospital boards are both morally and legally responsible for everything done in the hospital, including the work of the medical staff and the individuals thereof. One phase of the dispute supporting the opposing points of view led to the famous lawsuit in Iowa in 1954-1955, which in substance was a suit of the Iowa Hospital Association against the Iowa State Medical Society. It was an attempt to set aside an attorney general's ruling, which designated pathology and radiology as medical services and directed the billing for these services in the name of the doctor. Essentially the points at issue were:

"1. Can corporations practice medicine through employed physicians?

"2. Is the corporate non-profit hospital to be given a preferred status under state laws?

"3. Who is to control the health care in the community—the doctors, or the hospital administrator?

"4. Is there going to be need for Blue Cross and Blue Shield, or do we just need Blue Cross?

"5. Will doctors continue to be private practitioners of medicine, or will they be professional employees of the hospital?"

On November 28, 1955, the judge gave a decision sustaining the position of the Iowa State Medical Society. This was later followed by a law, passed by the State Legislature, incorporating the essential principles involved. In due course the dispute has taken on a national aspect more sharply defined than it was at the time of the Hess report. The American Hospital Association has recently issued (August 1959) a "Statement on Hospital-Hospital Physician Specialist Relationship," which states in part:

"First and foremost, the American Hospital Association has stated and continues to support the statement that it is the right and responsibility of both hospitals and physicians to develop on the basis of local conditions and needs any terms of service which are fair to patients and which are designed to provide high quality care.

"This freedom for hospitals and physicians in the interest of patients is of fundamental importance and transcends proprietary ethical concepts and disputed legal doctrines."

There is a further assertion that "the American Hospital Association recognizes that certain diagnostic and therapeutic services are a vital part of hospital services," and that "hospitals have responsibility for charges to patients for hospital services." This is to be contrasted with paragraph 3 of the "Guides" above in which it is stated "anesthesiology, pathology, physical medicine and radiology are an integral part of the practice of medicine." It would appear that the idea behind the hospital statement is that when a service is performed in the hospital it may have both administrative and professional aspects, and the hospital should assume responsibility for the total service. From the point of view of organized medicine, the exactly opposite position could be taken. In other words, if the practice involves both professional and administrative aspects, medicine should assume complete responsibility for both aspects, because professional aspects are far more important and far reaching than the administrative aspects of the service.

The statement of the American Hospital Association was followed by a reaction of acute concern in the local and national specialty groups involved. This resulted in twelve states—among them Louisiana—putting resolutions in the House of Delegates of the American Medical Association meeting in Dallas, in December 1959, on this subject. The substance of these resolutions was to reaffirm the "Guides" of 1951, mentioned above. The purpose of reaffirming was to make it clear that no interpretation or subsequent action by any part of the American Medical Association in any way altered or weakened the strength of the principles stated. The "Guides" were reaffirmed.

If hospitals are permitted to hire direct

and sell the services of physicians in the four special areas—pathology, radiology, anesthesiology, and physiatry—the hospital will be practicing medicine. The next step will be employment of surgeons, internists, and any other groups of physicians that would serve their purpose. That this is no visionary alarm is supported by recent statement by the American Hospital Association's president, Russell A. Nelson, M. D., who is director of the Johns Hopkins Hospital, Baltimore. He stated, among other things: " * * * the hospital must bring the physician into a much more important role in the administrative operation of the hospital; the physician must recognize that the changing pattern of medical practice is centering this practice more around the hospital and away from the physician's office."

The average physician is not in immediate contact with the problems connected with the hospital practice of medicine. He does not realize that this is a creeping threat to the independence of the physician and to the stability of medical practice itself. He must become alerted to these dangers and stand with his fellow members in the profession to maintain his independence and to continue to serve what is best for medicine as a whole. To state that these difficulties are all to be resolved locally is to surrender without a fight. The individual physician is at a substantial disadvantage in dealing with an established corporate board, either local or national. The physician's independence can be saved only by the action of organized medicine.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

SALK VACCINE AVAILABLE

Following a recent conference between the President and Secretary of the Louisiana State Medical Society, and Dr. W. J. Rein, State Health Officer, and other representatives of the State Board of Health, it was decided that, in view of a definite increase in the number of polio cases for the year 1959 (138 cases through December 26th, of which 101 were paralytic as compared to a total of 74 for 1958, of which 53 were paralytic), a joint concentrated effort would be made by the medical profession of Louisiana and the State Board of Health to immunize as many individuals as possible prior to the next polio season.

In order to accomplish this, and reach the individuals that need it most, which, according to recent surveys, are in the lower socio-economic groups and in the colored, principally between the age groups of 1-5 and 20-40, the State Board of Health will furnish on request to any practicing physician in Louisiana free polio vaccine for a limited period not to exceed three months, and preferably even less time, since obviously the program is dependent on availability of funds for vaccine, which will be determined by the demand.

The vaccine may be obtained by ordering directly from:

Dr. George H. Hauser, Director
Division of Laboratories
Louisiana State Board of Health
Room 709, Louisiana State Office Building
325 Loyola Avenue
New Orleans 12, Louisiana

It is requested that, as the vaccine is reordered, you submit a brief report on the number of individuals immunized and the number of doses received by these individuals.

CONFERENCE ON AGING FEBRUARY 17-18

The New Orleans Regional Conference on Aging sponsored by the American Medical Association will be held at the Roosevelt Hotel February 17-18. Participating in the symposium, in addition to physicians, will be members of the clergy, the press, educators, nutritionists, representatives of public and private health agencies, the American Farm Bureau and others interested in the care and the problems of the aged.

An outstanding panel of guest speakers will address the meeting which is expected to attract delegates from a four-state area. The meeting is open to all physicians. The public is also encouraged to attend.

Please spread the news of this meeting among your patients and friends and inform them that the public is invited to this meeting. We feel sure they will profit by attending and their presence will most assuredly encourage the representatives of the American Medical Association and the four State Societies cooperating in the preparation of this program for their efforts in bringing to the public educational information of a subject of vital interest to each and every family in this community.

We physicians are trying, as best we know how, to find the best means of helping our aging citizens and will appreciate your assistance in solving this problem.

RATE OF STILLBIRTHS AMONG U. S. WHITES HALVED IN 26 YEARS

The stillbirth rate among whites in the U. S. was cut approximately in half between 1928 and 1954, according to a survey reported by William R. Gaffey, Ph.D., Assistant Professor of Biostatistics at the University of California School of Public Health.

In 1930 the rate was approximately 30 stillbirths per 1,000 total births, and by 1954 the rate had dropped to 15. Improvement showed in first births at the extremes of the childbearing period, the greatest decrease being evident among women in the 15-to-19 age group and among older women in the 40-to-44 age group.

The study also indicated that the higher the birth order, the smaller the improvement. Risk of stillbirth appears least in second births, regardless of the mother's age. The figures rose for third, fourth, and fifth births, indicating that the risk increases with each successive birth. Little improvement was shown in the rate for eighth births at any age.

Dr. Gaffey said that the stillbirth decrease might be attributed to a generally better standard of living. However, the more complete figures that have been reported from 48 states since 1934 have made possible a more reliable estimate.

The term "stillbirth" — until 1945 — was defined with various meanings in different states, thus adding to the difficulty of interpreting the figures reported. "Stillbirth," more properly termed "fetal death," has since 1945 been defined in national statistics to mean death at over 20 weeks' gestation or with gestation period unknown; however, the definition still varies in many states.

Stillbirths under 20 weeks are not reported by the physician in some states, and, of course, criminal abortions are not included in the figures.

THE ORPHAN OF MEDICINE

Five times as many scientific articles have been published on the hand as on the foot notwithstanding the greater difficulties to which the foot is subjected," asserts Dr. Henri L. Du Vries.

Over 60 per cent of Americans suffer from painful feet, "induced mostly by shoes having a forepart with little resemblance to the size and shape of the feet on which the shoes are worn; 80 per cent of the shoes worn are the wrong size and may create minor or major pathologic alterations in the foot."

The human foot is an ingeniously constructed organ. One of the most complex joints in the body, the metatarsophalangeal articulation, is subject to many diseases and deformities. Enlargement around this joint is a common deformity in which the cause and morbid anatomy "rarely are the same in any two cases"; yet treatment is arbitrarily selected, depending on each surgeon's preference in operative procedure.

"Major deformities of the foot, such as talipes, have received studious attention; but these disorders comprise only a fraction of the multiplicity of foot disabilities." Furthermore, in medical schools and internship the foot receives less attention than any other part of the body. "Medicine ought to adopt the orphan."

Anatomist F. W. Jones said: "Man's foot is all his own. It is unlike any other foot. It is the most distinctly human part of the whole of his anatomical make-up. It is human specialization and whether he be proud of it or not, it is his hallmark, and so long as he remains man, it is by his feet he will be known from all other members of the animal kingdom." *(Illinois M. J. 116:279, November, 1959.)*

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Ascension	Third Tuesday of every month	
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Lafayette	Second Tuesday of every month	Lafayette
Morehouse	Third Tuesday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Tangipahoa	Second and fourth Thursdays of every month	Independence
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

SCOTT & WHITE CLINIC POSTGRADUATE CONFERENCE

The Scott and White Clinic announces its Eighth Annual Postgraduate Conference stressing **Current Topics in Medicine and Surgery.** This program, sponsored by Scott, Sherwood and Brindley Foundation and the University of Texas Postgraduate School of Medicine, will be presented in Temple on March 6, 7, 8, 1960. Registration forms can be obtained from Scott, Sherwood and Brindley Foundation, Scott and White Clinic, Temple, Texas.

Approved Credit for General Practice—20 Hours.

Registration Fee — $25.00.

The wives are cordially invited. A full round of social activities, including luncheon and dinner, are planned and are covered by the registration fee.

THE GILL MEMORIAL EYE, EAR AND THROAT HOSPITAL
Announces to the Profession
its
THIRTY-THIRD ANNUAL SPRING CONGRESS
IN
OPHTHAMOLOGY AND OTOLARYNGOLOGY
April 4 through April 9, 1960

Guest Speakers

Leonard Apt, M.D., Philadelphia, Pennsylvania.

William F. Barry, Jr., M.D., Durham, North Carolina.

Francis B. Catlin, M.D., Baltimore, Maryland.

James E. Crushore, M.D., Detroit, Michigan.

John F. Daly, M.D., New York, New York.

Edward A. Dunlap, M.D., New York, New York.

Ben S. Fine, M.D., Washington, D. C.

John R. Heller, M.D., Bethesda, Maryland.

John A. Dyer, M.D., Rochester, Minnesota.

John W. Henderson, M.D., Ann Arbor, Michigan.

William H. Kaufman, M.D., Roanoke, Virginia.

Alexander McCausland, M.D., Roanoke, Virginia.

P. Robb McDonald, M.D., Philadelphia, Pennsylvania..

Franklin B. McKechnie, M. D., Richmond, Virginia.

Alton Ochsner, M.D., New Orleans, Louisiana.

George E. Shambaugh, Jr., M.D., Chicago, Illinois.

Harvey E. Thorpe, M.D., Pittsburgh, Pennsylvania.

For Further Information Write:
Superintendent, P. O. Box 1789, Roanoke, Virginia.

LOUISIANA HEART ASSOCIATION

The Louisiana Heart Association has adopted Congestive Heart Failure as its theme for professional education in 1960, it was announced today by Dr. Homer J. Dupuy, president of Louisiana Heart Association.

Medical teams and speakers will bring the latest information about this subject to Parish Medical Societies, hospital staffs, and nursing groups.

Each year the State Heart Association, an affiliate of the American Heart Association, adopts a special emphasis for its presentations to physicians and nurses. During 1959, the theme was "Cardiac Emergencies".

This activity is under the direction of Dr. Harold P. Chastant of Lafayette, professional education chairman, and secretary of the Heart Association.

Team captains who will supervise the professional education program in their areas are:

Dr. Joe E. Holoubek, Shreveport; Dr. Cyril T. Yancey, Monroe; Dr. Elliot Roy, Mansura; Dr. David Buttross, Jr., Lake Charles; Dr. Harold Jacobs, Lafayette; Dr. Clay A. Wag-

genspack, Jr., Baton Rouge; Dr. Sanford W. Tuthill, Bogalusa; and Dr. George E. Welch, New Orleans.

Local program chairmen for medical societies and other professional groups can call upon the team captain closest to them. They can be reached during office hours or at home.

BIRTCHER WORD BOOK PUBLISHED IN SPANISH EDITION

As a service to the medical profession in Spanish speaking countries, the Birtcher Corporation has just published a Spanish edition of their famous Word Book. Originally written in English by The Birtcher Corporation's president Cecil J. Birtcher, with nearly one-half million copies having been distributed to the medical profession all over the world.

The Birtcher Word Book was originally published to provide a quick and simple way to train salesman in an understanding of medical words, so that they could do a more intelligent job in selling to the medical profession. However, as physicians, nurses and medical school professors discovered the Word Book, requests came pouring in, and as a result hundreds of thousands of copies have been supplied to the medical profession.

The Spanish edition of the Word Book was translated by Dr. Mario A. Nava of Mexico City, at the request of Mr. S. L. Bollas, Birtcher Vice President in charge of International Operations.

Copies of the Birtcher Word Book are available on request to the Birtcher Corporation, 4371 Valley Boulevard, Los Angeles 32, California U.S.A. Please specify when requesting whether you wish the Spanish or the English versions.

HEART OPERATIONS SUCCESSFUL ON RHEUMATIC FEVER PATIENTS

Young persons who have had rheumatic fever may safely undergo heart surgery, provided the disease is inactive, three Philadelphia doctors have reported.

Writing in the Sept. 19, 1959 issue of the Journal of the American Medical Association, they asked that neither a patient's age nor the fear of recurring rheumatic fever deter heart surgery.

Drs. Albert Brest, Joseph Uricchio and William Likoff of Hahnemann Medical College, Philadelphia, stressed the importance of operating when rheumatic fever is not active, and gauged the chances for a successful operation on this point.

Cardiac operations on rheumatic heart disease patients under 20 years old are rare, the doctors said, even when serious disability is present. They gave two reasons for this reluctance to operate. One is the belief that heart failure symptoms in this age group mainly arise from active rheumatic inflammation of the heart, rather than from a defective heart valve. Also, it is claimed that surgery reactivates the rheumatic fever of a person under 20.

Drs. Brest, Uricchio and Likoff questioned these concepts on the basis of their operations which showed that a mechanical obstruction may be the sole cause of a young rheumatic heart disease patient's worsened condition.

They added that failure to consider a mechanical heart defect may lead to an unnecessary prolongation of a critical disability.

The cardiac surgery which formed the basis of their study was performed between February 1951 and August 1958 on 30 patients 12 to 20 years old. The average interval since the most recent rheumatic fever attack was 8.6 years. In no case was it less than three years.

Follow-up observations lasted from four months to four years, and the patients showed no evidence of rheumatic fever activity.

ARMY NEEDS DOCTORS

Fort Chaffee, Arkansas, 3 December 1959—The Surgeon General of the United States Army has announced the need for Doctors of Medicine for assignment to U. S. Army Medical facilities thrughout the world.

Doctors who specialize in all branches of the Medical profession, with the exception of Pediatricians, Anesthesiologists, Ophthalmogists are encouraged to apply for active duty with the U. S. Army. Applicants, upon acceptance, will be called to active duty for three years or they may volunteer for indefinite tours beginning in April of 1960.

Grades of appointees will be determined by number of years of participation in professional activities. Medical school and internship will be counted both for pay and for determining initial grade of applicant.

For further details and applications, interested Doctors in Arkansas, Louisiana and Oklahoma should contact Lt. Col. W. H. Dickerson, Headquarters, Oklahoma Sector Command, XIX U. S. Army Corps (Reserve), 1101 N. Broadway, Oklahoma City, Oklahoma, Telephone: CEntral 5-4552.

FAMILY DOCTOR SCHEDULE PHILADELPHIA MEETING

The American Academy of General Practice will hold its 12th Annual Scientific Assembly, March 21-24, 1960, in Philadelphia's Convention Hall. More than 4,000 family doctors and 3,000 residents, interns, exhibitors and wives

will attend the four-day program highlighting recent progress in medicine and surgery. The Academy has more than 26,000 family doctor members and is the nation's second largest medical association.

The Philadelphia Assembly program lists 31 prominent medical educators who will discuss a variety of subjects ranging from arthritis and anemia to surgery, geriatrics and mental health. The doctors will also visit more than 100 scientific and 300 technical exhibits. Many of the scientific exhibits will relate directly to the scientific program. They have been carefully selected to answer questions posed by the doctor in active practice. All of the nation's pharmaceutical firms will be represented in the technical exhibit area.

TRANQUILIZERS HAVE "LITTLE TO OFFER" IN SKIN CONDITIONS

Tranquilizing drugs have "little to offer" in the treatment of patients with dermatological conditions, a Hayward, Calif., physician found after extensive study which required four years to complete.

Dr. Wayne Wright, who reported his findings in the Nov. 21 Journal of the American Medical Association, used nearly every type of tranquilizing drug in a study which involved a total of 740 patients, who were suffering from a wide variety of skin conditions. Many of the clinical cases were from the Travis Air Force Hospital in Fairfield, Calif.

Dr. Wright, who was assisted in his study by Drs. Jean S. Wright and Max Krause, concluded that there was only one type of dermatological condition which was helped by a tranquilizing drug. Nummular eczema, characterized by coin-shaped patches on the skin, was "definitely benefited" by one of the drugs, hydroxyzine hydrochloride.

Enough patients were helped, Dr. Wright said, to "conclude that it merits a trial in treatment of patients with this condition."

As adjunctive therapy, the tranquilizers help to relieve itching, to produce sleep, and to allow dosage of steroids and certain hormones to be reduced, the Journal article said.

The study revealed that the patients suffered many side reactions from this class of drugs whose principal effect is to calm down nervous, anxious, excited and agitated people. Minor side effects of the drugs used were blurred vision, nasal congestion, dryness of the mouth, changes in the pulse rate and constipation. The most serious side reactions were convulsions.

PROGRESS OF MEDICAL SCIENCE FORCES HIGH LABORATORY COST

How the progress of medical science forces the cost of certain laboratory procedures to reach almost unrealistic levels over which neither patient nor physician has control is seen from an article appearing in the Nov. 21 issue of the Journal of the American Medical Association.

Heart catheterization, a valuable diagnostic tool to the physician, has grown exceedingly complex and costly, especially in relation to the equipment and personnel required. This cost, however, is only the beginning. Heart catheterization is one of many procedures terminating in cardiac surgery which is carried out by a large team using a costly heart pump.

Cost analysis of heart catheterization is covered in a Journal article written by Dr. Max H. Weil, formerly chief of cardiology at the City of Hope Medical Center, Duarte, Calif., and presently assistant professor of medicine at the University of Southern California School of Medicine, Los Angeles.

FALL CLOTHES' CLEANING BAGS MUST BE DESTROYED

As clothes are brought out of storage, their covering plastic cleaning bags again become a major menace.

When the bags are removed from the clothing, they should be destroyed. They should be shredded or tied in knots and put in a tightly covered disposal can, an article recommended in the October 1959 Today's Health, published by the American Medical Association.

They should never be used as make-shift covering for pillows, blankets or mattresses in baby carriages, playpens, or cribs.

The bags with "their softness, silkiness and see-through characteristics" attract children as playthings. Children love to pull the bags over their heads, but when they do, they face possible death.

It appears, the article explained, that an electrostatic charge may be generated by friction from handling the bag. The youngster, while peering through, is apt to have the bag literally grab him through the electrical attraction to his face.

If this happens, only prompt intervention of an adult will prevent tragedy. A child can fight back at the material, but he cannot tear it. Dizziness, inability to think, and muscle spasm occur. Breathing becomes more and more rapid. Vomiting with inhalation of undigested food puts an end to this terrible situation, the article said.

It was written by Beatrice Schapper, New York.

BOOK REVIEWS

Patient Care and Special Procedures in X-ray Technology. By Carol Hocking Vennes, R.N. B.S. and John C. Watson, R.T. St. Louis, C. V. Mosby Co., pp. 203, 1959, $5.75.

This small monograph fills a definite gap in the training of x-ray technicians and student nurses. In fact, it might well be read by many members of the medical profession with a definite benefit. The relationship of the patient's clinical condition and how he should be handled in the x-ray department can only be understood when the technician becomes aware of the problems of medical diagnosis and nursing care.

The handling of the patient in such matters as movement from place to place or taking care of the patient with splints, casts, or who are patients under sedation are all considered in the text. Administration of drugs and fluids, as well as the care of patients who are receiving infusions is also covered. The handling of the cardiac, post-operative or severely injured patient with portable x-ray procedures is also described. The proper handling of the patient in routine procedures such as upper G.I. series and administration of barium enemas is followed by further discussion on special procedures such as pneumoencephalography, arteriography, myelography, and peripheral angiography.

Special problems in operating and recovery rooms forms still another chapter. The precautions to be followed in operating suite and precautions in the use of x-ray equipment are considered. It is emphasized that there is still no completely explosion proof x-ray unit.

A work of this nature should assume a definite place in the teaching curriculum of most schools of x-ray technology and might also be of considerable benefit to those instructors in nursing who teach student nurses what their patients will expect when they go to the radiology department. The text is well written and easily understood.

CHARLES M. NICE, JR., M.D.

Hypophysectomy; Edited by O. H. Pearson, M.D., F.A.C.P., Springfield, Illinois, Charles C Thomas, 1957: pp. 154, Price $5.00.

"Hypophysectomy", edited by O. H. Pearson of Cornell University Medical College and Memorial Hospital, presents a commentary on meetings held in March of 1956 at the Sloane-Kettering Institute in New York. The results given included experiences with hypophysectomy for cancer and juvenile diabetes. Surgical hypophysectomy by Drs. Herbert Olivecrona, Bronson Ray, William Peyton, Donald Matson and others were discussed together with experiences with attempts to achieve hypophysectomy by various forms of radiation by Drs. A. P. M. Forrest, D. M. Bergenstal, Joseph Evans and J. J. Nickson. The physiological effects of these procedures are likewise fully outlined.

In essence, the surgical procedure of hypophysectomy requires a meticulous technique. The degree of difficulty and risk depends in large part on the completeness of removal of the gland. Surgically, it is difficult to be certain of removing the last remnants lying anterior to the chiasm and in recesses of the sella obscured by venous channels. Radiation hypophysectomy has proved less predictable than surgery and more likely to result in either incomplete destruction of the gland or damage to adjacent neural structures including the visual pathways and hypothalmus.

Most promising remissions have been obtained in some cases of metastatic carcinoma of the breast. Others with this condition strangely obtain no benefits even when functional hypophysectomy is complete. For them, complete functional hypophysectomy does little, either beneficial or harmful, although diabetes insipidus must be treated. A remission of approximately two years may be expected in optimum cases. This is substantially better than that obtained with oophorectomy or adrenalectomy but selecting cases that will benefit most from the procedure has proved uncertain. One test to predict benefit from hypophysectomy is remission of tumor growth by oophorectomy. Provocative tests with small doses of estrogens may be used to determine if the tumor is stimulated to growth by hormones, but stimulating tumor growth is not an unmixed blessing. Hormonal suppression of the pituitary proves possible in some cases with tumor growth retardation, but the side effects of large doses cannot be disregarded.

Hypophysectomy for juvenile diabetes appears to offer a means of arresting the vascular aspects of the disease but does not prevent retinal hemorrhage from disease already existing in these vessels. It is a substantially more hazardous procedure than hypophysectomy for cancer as the brain vessels are more fragile in the twenty to thirty year olds so far operated upon.

W. RANDOLPH PAGE, M. D.

Principles of Prevention in the Occurrence and Progression of Disease; by Herman E. Hilliboe, M.D. and Granville W. Larimore, M.D., Philadelphia, W. B. Saunders Co. Price $12.00.

Books on preventive medicine are becoming more plentiful. That is as it should be. Just as preventive medicine and public health were part of the thinking and practice of well trained physicians prior to the twentieth century, the cycle is now beginning to repeat itself in that organized medicine is again taking a greater interest in preventive medicine and public health. This interest will unavoidably become greater

as knowledge of these disciplines continues to grow and to break down the barrier between therapeutics and prevention.

The author-editors are two very competent public health physicians. They have collected materials from lectures, seminars, and articles prepared by those specialists who have, for the last several decades, worked with the New York State Department of Health in teaching preventive medicine and public health to medical practitioners, students, and to those in related fields.

The main purpose of the book is to give orientation and to serve as a text for those physicians willing to incorporate preventive medicine into their practice. The authors claim that they are approaching preventive medicine from a new point of view. This point of view classifies prevention into: (1) Prevention of occurrence of disease, and (2) prevention of progression of disease. Actually, this is not a new point of view for most public health people, but probably does represent a newer approach in teaching to medical students and in the orientation of practitioners. Besides medical topics, the book includes chapters on such sanitary subjects as waste disposal, insect vectors, air pollution, accident hazards, hygiene of housing, potable water, and defense against atomic disaster. These subjects serve as background information to impress physicians how the environment is intricately involved with the medical problems of people. The format is good, the authors continually emphasize the dynamic nature of the development of prevention in relation to therapeutics and health. The book gives an excellent picture of the physicians' place in the field of preventive medicine and public health. It would add substantially to any physician's library.

BEN FREEDMAN, M. D.

So You Have Glaucoma; by Everett R. Veirs, M. D., New York, N. Y., Grune & Stratton, 1958, pp. 64, Price $2.75.

This concisely and conservatively written booklet is primarily for patients who have actual or potential glaucoma. Its value to our readers is primarily for referral use to glaucoma patients. This abstract will therefore largely be an amplification of its contents.

Section I deals with the definition and historic background of glaucomas. Section II, with the frequency of glaucomas; infants, juveniles, middle aged and elderly, including the influences of sex and heredity. Section III, with ocular anatomy including the cornea, sclera, uveal tract, lens, retina, optic nerves, and tear system. Section IV, with ocular physiology, including aqueous humor formation and escape, as well as the influence of ocular pressure. Section V deals with types and causes of glaucomas: (a) Primary: chronic simple, acute congestive, congenital and juvenile; (b) Secondary: traumatic, inflammatory, and following tumors and cataracts. Section VI, with signs and symptoms of glaucomas: Pain, visual loss, halos, redness, corneal clouding, enlargement of pupil and eyeball, intra-ocular pressure, and optic nerve changes. Section VII, with the diagnosis of glaucomas including: (a) family and personal history; (b) tonomotry, tonography, genioscopy, and ophthalmoscopy; (c) visual field determination; (d) provocative tests, including water drinking, dark room and pupillary dialation. Section VIII deals with the medical and surgical treatment of glaucomas: (a) Primary-acute (closed angle); (b) Secondary - acute, chronic (open angle).

CHAS. A. BAHN, M. D.

Correlative Neuroanatomy and Functional Neurology; by Joseph G. Chusid, M. D. and Joseph J. McDonald, M.S., Sc.D., M.D.; 9th ed., 1958. Los Altos, Calif. Lange Medical Publications. Pp. 345, Price $4.50.

The present volume is the latest revision of a work first published in 1938. It is paper covered but is durably bound and will stand up well under hard usage. The price is exceedingly reasonable considering the size and content of the volume.

The scope of this book is wide; it is composed of sections entitled: Central Nervous System, with 4 chapters and 58 pages; Peripheral Nerves, with 7 chapters and 106 pages, and Principles of Neurodiagnosis with 24 chapters and 148 pages. In addition, the book includes an extensive appendix of useful information covering a variety of subjects in the field of applied neurology. The coverage of the sections appears to be adequate and in proportion, with slightly more than half of the material devoted to the third section.

The volume is copiously illustrated with clear, instructive drawings liberally provided with labels. Other figures have been borrowed from selected publications; the reproduction in some of these borrowed figures is not entirely adequate.

The treatment of materials is consistent throughout and might be described as being of the "thumbnail sketch" type, wherein only the basic information on each subject is presented. On the whole, there is an adequate selection of facts together with their analysis.

Perhaps the only justifiable criticism stems from the opening sentence in the preface, which begins, "This volume is intended for the beginner in neurology . . . " It is the opinion of this reviewer that the book could better serve almost any other type of interested person. Its compact *precis* mode of presentation is ideal for anyone who wishes to review the subject or who has forgotten some special point. It is hardly adequate for readers who lack special background informa-

tion. The same quotation continues, " . . . and will serve him best if used as an aid or supplement to standard neurological texts and literature." This portion of the statement is of greatest importance to the reader since the volume is deficient in the field of relationship between facts and, by virtue of its organization plan, must remain so.

RALPH N. BAILLIF, PH.D.

The Diagnosis and Treatment of Infections; by D. Geraint James, M.A., M.D. (Cantab.), M.R.-C.P. (London), Springfield, Illinois: Charles C Thomas, 1957. Pp. 234, Price, 30 s.

This short work can be warmly recommended to the student or physician working with infectious diseases, as a ready source for the information concerning diagnosis and treatment that he requires. The author presents concisely the essentials of this important field and emphasizes the practical considerations which can easily be missed in a bulky textbook of microbiology. The book is divided into three parts: in the first, the uses of the chemotherapeutic drugs and antibiotics and the complications that they produce are presented; then the pathogenic micro-organisms are discussed; finally, the selective affinity of infections and organ systems is described. The result is a well organized manual from which necessary information concerning infectious diseases can be quickly obtained.

MORTON M. ZISKIND, M. D.

Applied Medical Library Practice; by James E. Keys, A.B., M.A., with Chapters by Catherine Kennedy, B.S., L.S.; Ruth M. Tews, B.S., L.S., Springfield, Ill., Charles C Thomas, Publisher, 1958, pp. 495. Price $10.00.

Authored by the Librarian of the Mayo Clinic, with the assistance of his staff, this book will prove useful to librarians and physicians alike, supplementing the material published in this field within recent years.

Of interest chiefly to the medical librarian are the chapters discussing administration, acquisitions, cataloging and classification, the medical indexes, abstract journals, medical bibliography, and the administration and organization of the patients' library. Containing useful information for both librarian and physician are such chapters as those covering the arrangement and preservation of reprints; the growth of medical publishing from the first printed book through the eighteenth century; important American medical publications and authors of the nineteenth century; the development of the private medical libraries of physicians such as Osler, Cushing, Holmes, Fulton, Trent and others; and the survey of medical publishing in the United States during the nineteenth and twentieth centuries. Consideration of the place of the medical library in graduate medical education, research libraries in medicine, and the changing concepts in library services, provide insight into the meaning of medical librarianship, especially helpful to the physician serving on a library committee.

Among the unique features of the book are: the appendices listing the publishers of medical and related books in the United States, medical book dealers in the United States handling new books, the antiquarian booksellers in the United States dealing in medical and related subjects, each list arranged by city, and the bibliography of medical works in facsimile as well as the chapter on the representative medical libraries of the United States.

A reference tool which most librarians will find advantageous to have in their collections.

ELIZABETH D. MARSH, B.S., B.S.L.S.

Ophthalmic Plastic Surgery; by Sidney A. Fox, M.S. (Ophth.) M. D., New York, N. Y., Grune and Stratton, Second Revised Edition, 1958, pp. 324, Price $15.00.

This concise text was written for the ophthalmic surgeon. It presents an integrated system of ophthalmic plastic surgery by an authoritative source. Comments on anatomy and surgical technique are terse and restricted to the field. Repairs of various lesions are considered in anatomical sequence. For each situation the simplest procedure resulting in the least complications has been described and diagrammed. When numerous procedures are appropriate, the author's preference is explained, though other procedures are descibed.

Constant attention to principles underlying successful ophthalmic surgery as determined by the author's experience, numerous lucid diagrams, and an integrated approach to the choice of procedures make this a text of great practical value. It is not intended as a comprehensive reference work. The description of several new procedures, minor text changes and the edition of numerous lucid diagrams differentiate this from the preceding edition.

JAMES MCCOMISKEY, M. D.

PUBLICATIONS RECEIVED

Grune & Stratton, N. Y.: Acute Pericarditis, by David H. Spodick. M.D.

W. B. Saunders Co., Phila.: Christopher's Minor Surgery, by Alton Ochsner, M.D., and Michael E. DeBakey, M.D. (8th edit.).

Charles C Thomas, Publisher, Springfield, Ill.: Metabolic Aspects of Renal Function, by William D. Lotspeich, M.D.

Vanderbilt University Press, Nashville: The Clonal Selection Theory of Acquired Immunity, by Sir Macfarlane Burnett.

Vantage Press, N. Y.: A Doctor's Life of John Keats, by Walter A. Wells, M.D.